

## Essential Question Preview

### How does the use of geographic tools help us view the world in new ways?

Have the students consider the Essential Question and capture their initial responses.

## Explore the Essential Question

- Tell students that geography is the study of the world, its people, and the landscapes they create. To help us better understand how the world works, geographers study the various human and physical features that make places unique.
- Explain that geographers often use five main themes and six essential elements to identify the most important ideas in the study of geography.

Encourage students to keep the Essential Question in mind as they work through the module. Help students plan inquiries and develop their own supporting questions such as:

*What is the difference between physical and human geography?*

*Why is the study of geography important?*

You may want to assign students to write a short essay in response to the Essential Question when they complete the module. Encourage student to use their notes and responses to inform their essays.

## ► Explore the Online Video

### ANALYZE VIDEOS

#### The National Geographic Bee

Invite students to watch the video to learn how students from across the United States compete in the National Geographic Bee.

**Geography** Why is the National Geographic Bee so competitive? *The winner receives \$85,000 in college scholarship money and the annual contest is broadcast on TV.*



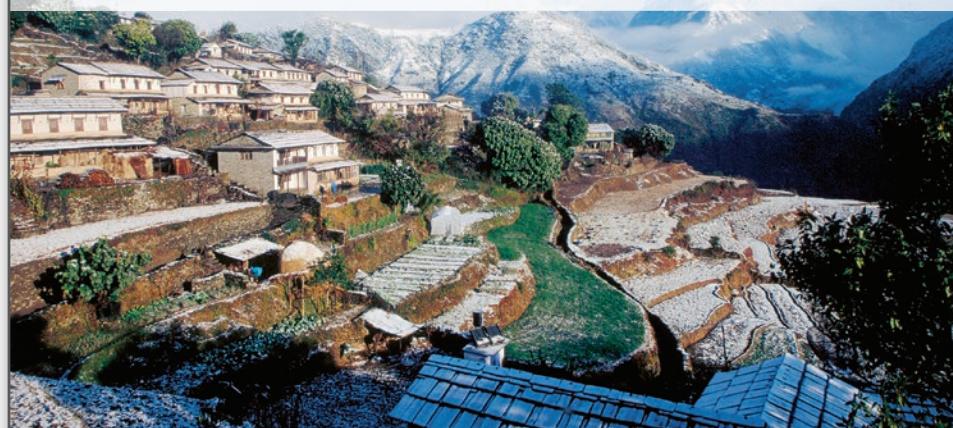
### Module 1

# A Geographer's World



### Essential Question

How does the use of geographic tools help us view the world in new ways?



**About the Photo:** This village is in the country of Nepal. It rests high in the Himalayas, the highest mountains in the world.

#### ► Explore ONLINE!

- Document-Based Investigations
- Graphic Organizers
- Interactive Games
- Animation: How Satellites Gather Map Data
- Channel One News Video: Making Art with GPS
- Animation: Map Projections
- Animation: How to Read a Map

In this module, you will learn that geography is the study of the world. You will find out how geographic studies are organized and what tools are used.

#### What You Will Learn

Lesson 1: Studying Geography . . . . .	5
The Big Idea Geography helps us view the world in new ways.	
Lesson 2: The Branches of Geography . . . . .	10
The Big Idea Geography is divided into two main branches—physical geography and human geography.	
Lesson 3: Themes of Geography . . . . .	16
The Big Idea Geographers have created two different but related systems for organizing geographic studies.	
Lesson 4: The Geographer's Tools . . . . .	20
The Big Idea Geographers use many tools to study the world.	
Lesson 5: Geography Handbook . . . . .	24
The Big Idea Geographers study the world by understanding maps and geographic features of Earth.	

2 Module 1

## Lesson 1 Big Idea

The study of geography helps us view the world in new ways.

### Main Ideas

- Geography is the study of the world, its people, and the landscapes they create.
- Geographers look at the world in many different ways.

## Lesson 2 Big Idea

Geography is divided into two main branches—physical geography and human geography.

### Main Ideas

- Physical geography is the study of landforms, water bodies, and other physical features.
- Human geography focuses on people, their cultures, and the landscapes they create.
- Other branches of geography examine

specific aspects of the physical or human world.

## Lesson 3 Big Idea

Geographers have created two different but related systems for organizing geographic studies.

### Main Ideas

- The five themes of geography help us organize our studies of the world.
- The six essential elements of geography highlight some of the subject's most important ideas.

## Lesson 4 Big Idea

Geographers use many tools to study the world.

### Main Ideas

- Maps and globes are the most commonly used tools of geographers.
- Many geographers study information gathered by satellites.



**Physical Geography** Geography is the study of the world's land features, such as this windswept rock formation in Arizona.



**Studying the World** Exploring the world takes people to exciting and interesting places.

**Human Geography** Geography is also the study of people. It asks where people live, what they eat, what they wear, and even what kinds of animals they keep.



A Geographer's World 3

- Geographers use many other tools, including graphs, charts, databases, and models, in their work.

- There are different kinds of maps for different uses.
- There are many kinds of landforms and other features on Earth.

## Lesson 5 Big Idea

Geographers study the world by understanding maps and geographic features of Earth.

### Main Ideas

- When creating maps, cartographers use a pattern of latitude and longitude lines that circle Earth.
- Cartographers have created map projections to show the round surface of Earth on a flat piece of paper.
- Cartographers provide features to help users read maps.

## Explore the Images

**Nepal** Some of the world's highest mountains, part of the Himalayas, lie within or border Nepal. Strong rivers run from these mountains to create lush valleys.

**Human Geography** Geography is also the study of people. It asks where people live, what they eat, and what they wear. Human geography even asks what kinds of animals they raise, such as this girl.

**Physical Geography** Geography is the study of the world's land features, such as this windswept rock formation in Arizona. Land features are part of the world's physical geography.

**Studying the World** Exploring the world takes people to exciting and interesting places. This man explores and learns about the world by rock climbing.

### Analyze Visuals

How can you study the world like a geographer? *observe how people live in their physical environments*

## ► Online Module Flip Cards

Use the flip cards as a whole class activity or in student pairs to preview the module's Key Terms and Places. Students can guess the meaning of each word, then review its definition, or do the reverse, using the flip card's toggle button to switch from "Term" to "Definition" mode. Students can also use the flip cards at the end of the module as a review tool before taking the Module Assessment.

## ► Online Map Activity

Students can use this activity to review some of the locations discussed in this module. To complete, have students drag each label to the correct location on the map.



# Reading Social Studies

## Reading Social Studies

### READING FOCUS

#### Use Prior Knowledge

Have students find a news story that interests them. Then, have them make a two-column chart like the one on this page. Tell them to read just the headline of their news story. Ask them to fill in the first column with what they know about the subject before they read. Then, have them read the news story and fill in the second column with what they learned. Ask volunteers to share their charts with the class.

#### You Try It!

Possible answers for “What else I learned”: geographers study satellite images to see what Earth’s surface looks like from above; satellites collect information we cannot see from Earth’s surface; geographers use satellite images to make maps

## Use Prior Knowledge

### READING FOCUS

When you put together a puzzle, you search for pieces that are missing to complete the picture. As you read, you do the same thing when you use prior knowledge. You take what you already know about a subject and then add the information you are reading to create a full picture. The example below shows how using prior knowledge about computer mapping helped one reader fill in the pieces about how geographers use computer mapping.

In the past, cartographers always drew maps by hand. Many of those maps were not very accurate. Today, though, most maps are made using computers and satellite images. Through advances in mapmaking, we can make accurate maps on almost any scale, from the whole world to a single neighborhood, and keep them up to date.

Computer Mapping	
What I know before reading	What else I learned
My dad uses the computer to get maps for trips.	Maps have not always been very accurate.
I can find maps of states and countries on the Internet.	Computers help make new kinds of maps that are more than just cities and roads.
	These computer maps are an important part of geography.

### YOU TRY IT!

Create a chart like the Computer Mapping one above, but change the title to “Satellite Images.” Fill in some prior knowledge in the left column. Then take turns reading aloud the passage below with a partner. Once you each have read the passage, add what you learned about satellite images to the right column.

Much of the information gathered by these satellites is in the form of images. Geographers can study these images of Earth to see what an area looks like from far above. Satellites also collect information that we cannot see from the planet’s surface. The information gathered by satellites helps geographers make accurate maps.

**As you read this module,** use your prior knowledge to help add to your understanding of the text.



# Studying Geography

- ◆ What Is Geography?
- ◆ Geographer's Questions
- Looking at the World

Visuals

Videos

Maps,  
Graphs, and  
Charts

LESSON 1

## Big Idea

The study of geography helps us view the world in new ways.

- Study Your Community
- Global Trade

Extend  
and Enrich

- Document-Based Investigation:  
Satellite Technology

Sources

## Assessment

- Key Terms Review
- Reading Check
- Graphic Organizer Activity
- Lesson Assessment

KEY

- Non-digital resource

## ► Online Lesson 1 Enrichment Activities

### Study Your Community

**Article** Students read about infographics and then create an infographic about some aspect of their community.

### Global Trade

**Article** Students read about how countries around the world can interact through one commodity, then research a chosen country's main export and trade partners.

# Studying Geography

## The Big Idea

The study of geography helps us view the world in new ways.

## Main Ideas

- Geography is the study of the world, its people, and the landscapes they create.
- Geographers look at the world in many different ways.

## Key Terms and Places

geography  
landscape  
social science  
regions

## If YOU lived there ...

You have just moved to Miami, Florida, from your old home in Pennsylvania. Everything seems very different—from the weather and the trees to the way people dress and talk. Even the streets and buildings look different. One day you get an email from a friend at your old school. “What’s it like living there?” your friend asks.

### How will you describe your new home?

## What Is Geography?

Think about the place where you live. What does the land look like? Are there tall mountains nearby, or is the land so flat that you can see for miles? Is the ground covered with bright green grass and trees, or is the area part of a sandy desert?

Now think about the weather in your area. What is it like? Does it get really hot in the summer? Do you see snow every winter? How much does it rain? Do tornadoes ever strike?

Finally, think about the people who live in your town or city. Do they live mostly in apartments or houses? Do most people own cars or do they get around town on buses or trains? What kinds of jobs do adults in your town have? Were most of the people you know born in your town or did they move there?

The things that you have been thinking about are part of your area’s geography. **Geography** is the study of the world, its people, and the landscapes they create. To a geographer, a place’s **landscape** is all the human and physical features that make it unique. When they study the world’s landscapes, geographers ask questions much like the ones you just asked yourself.

**Geography as a Science** Many of the questions that geographers ask deal with how the world works. They want to know what causes mountains to form and what creates tornadoes. To answer questions like these, geographers have to think and act like scientists.

As scientists, geographers do field work to gather data, or information, about places. Gathering data can sometimes lead geographers to fascinating places. They might have to crawl

## Teach the Big Idea

### 1. Whole Class Open/Introduction

If **YOU** lived there ...

**How will you describe your new home?**

Review the scenario with students and lead a class discussion around responses to the question. Remind students that all responses are valid as long as they are supported with valid reasoning. You may wish to review the following points to frame your discussion.

#### Consider the CULTURE of Miami, Florida:

- many people from Cuba and other Spanish-speaking countries
- many tourists
- modern downtown and historic neighborhoods

#### Consider the LANDSCAPE and CLIMATE of Miami, Florida:

- beaches and palm trees
- lots of sun
- mild temperatures

**2. Direct Teach** Introduce the Big Idea: *The study of geography helps us view the world in new ways.* Ask students to think of specific words that describe the climate in Florida. How might the climate impact the plant and animal life found in the region? How might it influence the way people dress?

**3. Practice/Assess/Inquire** Have students work in small groups to create a poster describing their community for a geographer who will be studying it. The group should agree on labels for physical and human characteristics. For each label, students should provide visual or written information, indicate known regional or global connections (such as the names of rivers or immigrant groups), and suggest a method of study (make observations).

**4. Explore (Collaborative Exploration)** Have each group present its poster to the class.

**5. Whole Group Close/Reflect** Have students draw a map of their neighborhood. Tell students to include a compass rose and a legend.

\*Alternative Assessment Handbook, Rubric 20: Map Creation

### ONLINE DOCUMENT-BASED INVESTIGATION

#### A Geographer's World

Satellite Technology is the first of six document-based investigations that students will analyze in A Geographer’s World. This animation shows how satellites help geographers gather data.

## Teach the Main Idea

Geography is the study of the world, its people, and the landscapes they create.

**Identify** What are three ways that geographers can gather scientific data about places? *make observations, take measurements, study satellite images*

**Explain** Why is geography sometimes called a social science? *It deals with people and how they live.*

**Summarize** What are some types of work a geographer might do? *study places close-up, such as caves and mountains; study the earth using images taken from a distance; study the lives of people in a certain place*

**Predict** In what ways could studying geography be useful? *help communities plan change; learn how people protect themselves from weather; see how world regions affect each other*

#### More About ...

##### Connect to Language Arts: Word Origins

The word *geography* comes from the Greek *geographein*, meaning “to describe the earth’s surface”; “geo” means “earth” and “graphein” means “to write.” Can you think of another type of study of the earth that begins with “geo”? *geology*

## ► ONLINE GRAPHIC ORGANIZER

### Studying Geography

As students read the lesson, have them use the graphic organizer to take notes. Students can review their graphic organizer notes at the end of the lesson to answer the following question:

**Draw Conclusions** Why is it important for geographers to study people and places? *because places can affect where and how people live, and people can have an impact on their environment*

## ► ONLINE LESSON FLIP CARDS

### Review Key Terms and Places

Students can use the flip cards in the Lesson Review at any time to review the lessons key terms and places: **geography, landscape, social science, region.**

## ► ONLINE DOCUMENT-BASED INVESTIGATION

### Satellite Technology

This animation explains how satellites collect data to create maps. Have students explore the animation and answer the associated question.

**Analyze Sources** Why would satellites be useful in mapping mountainous areas? *It can be difficult to explore mountainous areas on foot or even by airplane.*

## ► ONLINE INTERACTIVE VISUALS

### Image with Hotspots: What Is Geography?

Have students explore the image using the interactive hotspots. You may wish to use the associated question as a discussion prompt.

**Analyze Visuals** What is the landscape of this part of Algeria like? *small village, huge desert, tall sand dunes*

#### READING CHECK

**Compare** In what ways is geography both a science and a social science? *Like scientists, geographers gather and study data. Geographers also study people and how they live, like social scientists.*

deep into caves or climb tall mountains to make observations and take measurements. At other times, geographers study sets of images collected by satellites orbiting high above Earth. These scientists make observations about the places they study. Then they record those observations.

However geographers make observations and gather data, they have to study it carefully. Like other scientists, geographers must examine their findings in great detail before they can learn what all the information means. These scientists interpret and summarize the data gathered. Then they make their conclusions.

**Geography as a Social Science** Not everything that geographers study can be measured in numbers, however. Some geographers study people and their lives. For example, they may ask why countries change their governments or why people in a place speak a certain language. This kind of information cannot be measured.

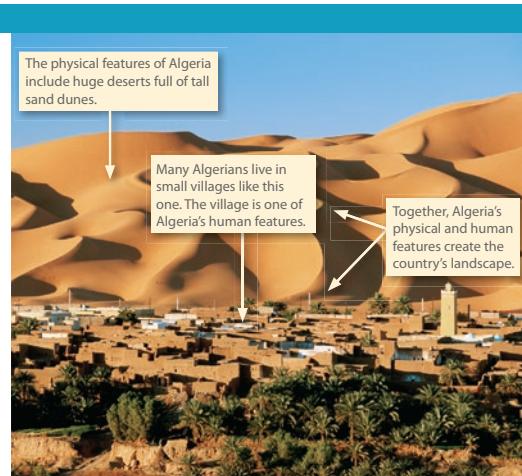
Because it deals with people and how they live, geography is sometimes called a **social science**. A social science is a field that studies people and the relationships among them.

The geographers who study people do not dig in caves or climb mountains. Instead, they visit places and talk to the people who live there. That is the field work they do to gather information about people's lives and communities. These geographers may design and conduct surveys to gather information. They also might record oral histories from what people tell them about their communities.

### What Is Geography?

Geography is the study of the world, its people, and the landscapes they create. To study a place's geography, we look at its physical and human features.

**Analyze Visuals**  
What is the landscape of this part of Algeria like?



6 Module 1

### STRUGGLING READERS

#### Understand Geography as a Science

- To help students understand that geography is both a science and a social science, draw a concept map with *Geography* as the central idea. Draw branches to *Science* and *Social Science*.
- Have students copy the graphic organizer and add examples of what geographers do, categorizing them as science or social science. *Possible answers: science—observe, measure, view satellite images; social science—visit places people live, talk to people.* When students are finished, review the answers with the group.

\*Alternative Assessment Handbook, Rubric 13: Graphic Organizers

### ENGLISH LANGUAGE LEARNERS

#### Create Landscape Artwork

- To help students understand the meaning of landscapes, have students draw pictures of their neighborhoods. Their pictures could include human features (e.g., buildings, roads) or natural features (e.g., rivers, hills, trees). Have students label the features.
- When the pictures are complete, have students share them in pairs and discuss these questions: What features make their landscapes unique? What questions might a geographer ask about the landscapes to understand how this part of the world works?

\*Alternative Assessment Handbook, Rubrics 3: Artwork and 11: Discussions

## Looking at the World

Whether they study volcanoes and storms or people and cities, geographers have to look carefully at the world around them. To fully understand how the world works, geographers often look at places at three different levels.

**Local Level** Some geographers study issues at a local level. They ask the same types of questions we asked at the beginning of this module: How do people in a town or community live? What is the local government like? How do the people who live there get around? What do they eat?

By asking these questions, geographers can figure out why people live and work the way they do. They can also help people improve their lives. For example, they can help town leaders figure out the best place to build new schools, shopping centers, or sports complexes. They can also help the people who live in the city or town plan for future changes.

**Regional Level** Sometimes, though, geographers want to study a bigger chunk of the world. To do this, they divide the world into **regions**. A region is a part of the world that has one or more common features that distinguish it from surrounding areas.

Some regions are defined by physical characteristics such as mountain ranges, climates, or plants native to the area. As a result, these types of regions are often easy to identify. The Rocky Mountains of the western United States, for example, make up a physical region. Another example of this kind of region is the Sahara, a huge desert in northern Africa.

Other regions may not be so easy to define, however. These regions are based on the human characteristics of a place, such as language, religion, or history. A place in which most people share these kinds of characteristics can also be seen as a region. For example, most people in Scandinavia, a region in northern Europe, speak similar languages and practice the same religion.

Regions come in all shapes and sizes. Some are small, like the neighborhood called Chinatown in San Francisco. Other regions are huge, like the Americas. This huge region includes two continents—North America and South America. The size of the area does not matter, as long as the area shares some characteristics. These shared characteristics define the region.

Geographers divide the world into regions for many reasons. The world is a huge place and home to billions of people. Studying so large an area can be extremely difficult. Dividing the world into regions makes it easier to study. A small area is much easier to examine than a large area.

Other geographers study regions to see how people interact with one another. For example, they may study a city such as London, England, to learn how the city's people govern themselves. Then they can compare what they learn about one region to what they learn about another region. In this way, they can learn more about life and landscapes in both places.

## IDENTIFY FRAME OF REFERENCE

### Use a Globe

1. Bring a globe to the front of the class. Ask students what *global* means. Be sure they understand it refers to the whole planet.
2. Ask what *local* means. Ask for a volunteer to point on the globe to their town or city. Ask the class if everyone agrees this location is correct.
3. Ask what *regional* means. Ask a volunteer to show the region the school community is part of (for example, surrounding cities or states). Have the student explain why this is a region (for example, shared land features). You may want to have other volunteers cite other shared features.

4. Ask volunteers to show on the globe the local and regional locations for cities in other countries.
5. Lastly, name some physical and human characteristics. Then ask for volunteers to identify a region on the globe that shares those characteristics.

\*Alternative Assessment Handbook, Rubric 9:  
Comparing and Contrasting

## Teach the Main Idea

Geographers look at the world in many different ways.

**Recall** What two types of characteristics can define a region? *physical, human*

**Contrast** What might a geographer study at the local, regional, and global levels? *local—how people in a community or town live; regional—how the landscape affects people's lives, how people in the region interact; global—how people interact all over the world, how people's actions in one place affect other parts of the world*

**Identify Cause and Effect** What do you think will happen as communication and transportation systems improve? *global relationships will become more common*

## More About . . .

### Connect to Today: London Underground

**Bombing** Millions of people use London's transportation system each day—for work, tourism, shopping, and other daily activities. On July 7, 2005, terrorists killed 56 people and injured 700 of those riding London's buses and underground railway system. Although London's transportation system was severely disrupted, most of it was back in operation soon after the attack, allowing people to resume normal activities.

## ONLINE INTERACTIVE VISUALS

### Image with Text Slider: Geographers' Questions

Have students explore the image by revealing additional information using the interactive slider.

## VISUALS

### Looking at the World

Have students study the images and answer the associated question.

**Analyze Visuals** Based on these photos, what are some questions a geographer might ask about London? *Students' questions should focus on images that refer to the local, regional, and global levels of London.*

**Global Level** Sometimes, geographers do not want to study the world just at a regional level. Instead, they want to learn how people interact globally, or around the world. To do so, geographers ask how events and ideas from one region of the world affect people in other regions. In other words, they study the world on a global level.

Geographers who study the world on a global level try to find relationships among people who live far apart. They may, for example, examine the products that a country exports to see how those products are used in other countries.

### Looking at the World

Geographers look at the world at many levels. At each level, they ask different questions and discover different types of information. By putting information gathered at different levels together, geographers can better understand a place and its role in the world.



Local Level

This busy neighborhood in London, England, is a local area. A geographer here might study local foods, housing, or clothing.



Regional Level

As a major city, London is also a region. At this level, a geographer might study the city's population or transportation systems.



Global Level

London is one of the world's main financial centers. Here, a geographer might study how London's economy affects the world.

**Analyze Visuals**

Based on these photos, what are some questions a geographer might ask about London?

## SPECIAL NEEDS STUDENTS

### Discuss the Life Cycle of a Fruit

- To help students apply their prior knowledge, ask them to name a fruit that is common to your area. Then ask them to narrate and describe the life cycle of this fruit from planting to eating.
- Have them explain how physical and human features (such as farmlands and farming methods, irrigation, roads, and stores) are needed for this plant.

\* Alternative Assessment Handbook, Rubric 11: Discussions

## ADVANCED/GIFTED

### Research the Channel Tunnel

- Have students research the Channel Tunnel that connects England and France. Direct them to find out when and how it was built; its size, depth, and design; the cost, and number and types of workers.
- Have students produce a newspaper article with pictures and diagrams to announce the tunnel's opening.

\* Alternative Assessment Handbook, Rubrics 30: Research; and 23: Newspapers

**Reading Check**  
**Find Main Ideas**  
At what levels do geographers study the world?

In recent decades, worldwide trade and communication have increased. As a result, we need to understand how our actions affect people around the world. Through their studies, geographers provide us with information that helps us figure out how to live in a rapidly changing world.

**Summary and Preview** Geography is the study of the world, its people, and its landscapes. In the next lesson, you will explore the branches into which the field is divided.

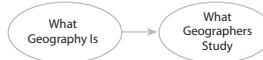
**Lesson 1 Assessment**

**Review Ideas, Terms, and Places**

1. a. **Define** What is geography?
- b. **Explain** Why is geography considered a science?
2. a. **Identify** What is a region? Give two examples.
- b. **Elaborate** What global issues do geographers study?

**Critical Thinking**

3. **Summarize** Draw two ovals like the ones shown here. Use your notes to fill the ovals with information about geography and geographers.



**READING CHECK**

**Find Main Ideas** At what levels do geographers study the world? *local, regional, global*

## Print Assessment

### Review Ideas, Terms, and Places

1. a. **Define** What is geography? *the study of the world, its people, and the landscapes they create*
- b. **Explain** Why is geography considered a science? *It involves gathering and studying data.*
2. a. **Identify** What is a region? Give two examples. *a part of the world that has common features; Rocky Mountains and Sahara*
- b. **Elaborate** What global issues do geographers study? *how people interact all over the world; how actions in one place affect other places*

### Critical Thinking

3. **Summarize** Draw two ovals. Use your notes to fill the ovals with information about geography and geographers. *Students' responses should reflect their understanding of lesson content.*

## COLLABORATIVE LEARNING

### Define Geography

1. Tell students that they will participate in a collaborative discussion and write a response to the question: What is geography?
2. Organize the class into groups of three to four students and have students discuss ideas about how best to respond to the question by citing text evidence from the lesson.

3. Remind students to take turns, listen to others, and build on each other's ideas.
4. After students have had time to discuss the question, have each group work together to write a one-paragraph summary to share with the class.

\*Alternative Assessment Handbook, Rubric 11:  
Discussions

## ► Online Assessment

1. Why are people important to geographers?
  - because they have jobs
  - because they visit places
  - because they produce data
  - because they create landscapes

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Geographers study the world, its people, and the **landscapes** ▲ they create.

2. How do geographers study the world at the global level?
  - by learning about why people want to live in cities
  - by learning about how people adapt to weather conditions
  - by examining how events and ideas from one region affect other regions
  - by examining how physical characteristics and human activities affect a region

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Geographers who study the world on a global level may examine a country's **exports** ▲.

3. **Make Generalizations** Why is geography considered a science?

*In their work, geographers examine what causes mountains to form and what creates tornadoes. To answer these types of questions, geographers act like scientists by gathering data and drawing conclusions.*

4. **Summarize** Why do geographers divide the world into regions? Describe two reasons.

*Because the world is a huge place, geographers divide it into regions to make it easier to study. Dividing the world into regions also allows geographers to compare characteristics of these regions, such as their governments.*





# The Branches of Geography



## ► Online Lesson 2 Enrichment Activities

### Geography Dream Team

**Article** Students learn about the different careers in the field of geography. They select a team of four explorers to travel to a new planet, explaining how each explorers' field of study would contribute to learning about this unknown environment.



### Ellen Churchill Semple (1863–1932)

**Article** Students learn about a groundbreaking American geographer who studied communities in the United States and around the world, wrote well-regarded books, and taught in colleges and universities. Then they consider a research project involving human or physical geography that could be done in their community and detail the type of fieldwork needed to complete the project.

### Urban Planner in Miniature

**Video** Students watch a video detailing a day in the life of an urban planner, then draw up plans for their ideal city.

#### Watch Channel One News

PLAY VIDEO 3:35  
► What's Next: Urban Planner

1 Channel One News

## Teach the Big Idea

### 1. Whole Class Open/Introduction

If **YOU** lived there . . .

**Which vacation sounds more interesting? Why?**

Review the scenario with students and lead a class discussion around responses to the question. Remind students that all responses are valid as long as they are supported with valid reasoning. You may wish to review the following points to frame your discussion.

**Consider reasons why the GRAND CANYON sounds interesting:**

- beauty of the landscape
- clean, fresh air of the region
- peacefulness of the canyon

**Consider reasons why NASHVILLE sounds interesting:**

- center for the music industry
- shopping and dining
- city's museums

**2. Direct Teach** Introduce the Big Idea: *Geography is divided into two main branches—physical and human geography.* Ask students to tell which vacation seems more focused on physical geography and which on human geography. How do they know? What types of landforms might one see near the Grand Canyon? What kinds of human geography might be found in Nashville?

**3. Practice/Assess/Inquire** Have students draw or write a detailed depiction of a feature—physical or human—of the town or city where the school is located. Have each student show or read his or her work to the class.

**4. Explore (Collaborative Exploration)** As a class, create a collage of all the works. Decide on the collage design as a class. For example, you could arrange the pictures according to location.

**5. Whole Group Close/Reflect** Have students write from an ant's eye view about a baseball field or other spot with physical and human features. Tell students to include details about how the ant puts the pieces of the "big picture" together as it travels over the area.

\*Alternative Assessment Handbook, Rubric 8: Collages; and 40: Writing to Describe



### ONLINE DOCUMENT-BASED INVESTIGATION

#### A Geographer's World

Computer Mapping is the second of six document-based investigations that students will analyze in A Geographer's World. Computer mapping describes how computers help cartographers create maps. An image provides an example of a complex map.

## Lesson 2

# The Branches of Geography

If **YOU** lived there . . .

You are talking to two friends about the vacations their families will take this summer. One friend says that his family is going to the Grand Canyon. He is very excited about seeing the spectacular landscapes in and around the canyon. Your other friend's family is going to visit Nashville, Tennessee. She is looking forward to trying new foods at the city's restaurants and touring its museums.

**Which vacation sounds more interesting? Why?**

## Physical Geography

Think about a jigsaw puzzle. Seen as a whole, the puzzle shows a pretty or interesting picture. To see that picture, though, you have to put all the puzzle pieces together. Before you assemble them, the pieces do not give you a clear idea of what the puzzle will look like when it is assembled. After all, each piece contains only a tiny portion of the overall image.

In many ways, geography is like a huge puzzle. It is made up of many branches, or divisions. Each of these branches focuses on a single part of the world. Viewed separately, none of these branches shows us the whole world. Together, however, the many branches of geography improve our understanding of our planet and its people.

Geography's two main branches are physical geography and human geography. Geographers identify and locate major physical and human geographic features of various places and regions in the world. The first branch, **physical geography**, is the study of the world's physical geographic features—its landforms, bodies of water, climates, soils, and plants.

**The Physical World** What does it mean to say that physical geography is the study of physical geographic features? Physical geographers want to know all about the different features found on our planet. They want to know where mountain ranges are, how rivers flow across the landscape, and why different amounts of rain fall from place to place.

10 Module 1

## Teach the Main Idea

Physical geography is the study of landforms, waterbodies, and other physical features.

**Compare** How is the study of geography similar to pieces of a jigsaw puzzle?

*Viewed separately, no branch shows the whole world; viewed together, the different branches improve understanding of the planet and its people.*

**Recall** What might geographers measure to learn about the world? Name two elements or features. *mountain heights, temperatures*

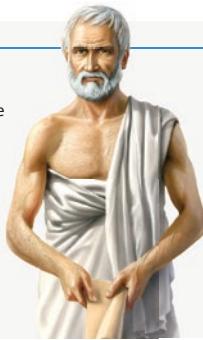
**Infer** How could the study of physical geography help people who live in an area at risk for tsunamis? *understand what conditions may cause them, recognize the signs that one is coming, make changes and plans to minimize its effects*

**BIOGRAPHY****Eratosthenes** (c. 276–c. 194 BC)

Did you know that geography is over two thousand years old? Actually, the study of the world is even older than that, but the first person ever to use the word *geography* lived then. His name was Eratosthenes (er-uh-TAHS-thuh-neeZ), and he was a Greek scientist and librarian. With no modern instruments of any kind, Eratosthenes figured out how large Earth is. He also drew a map that showed all of the lands that the Greeks knew about. Because of his many contributions to the field, Eratosthenes has been called the Father of Geography.

**Generalize**

Why is Eratosthenes called the Father of Geography?



More importantly, however, physical geographers want to know what causes the different shapes on Earth. They want to know why mountain ranges rise up where they do and what causes rivers to flow in certain directions. They also want to know why various parts of the world have very different weather and climate patterns.

To answer these questions, physical geographers take detailed measurements. They study the heights of mountains and the temperatures of places. To track any changes that occur over time, physical geographers keep careful records of all the information they collect.

**Uses of Physical Geography** Earth is made up of hundreds of types of physical geographic features. Without a complete understanding of what these features are and the effect they have on the world's people and landscapes, we cannot fully understand our world. This is the major reason that geographers study the physical world—to learn how it works.

There are also other, more specific reasons for studying physical geography, though. Studying the changes that take place on our planet can help us prepare to live with those changes. For example, knowing what causes volcanoes to erupt can help us predict eruptions. Knowing what causes terrible storms can help us prepare for them. In this way, the work of physical geographers helps us adjust to the dangers and changes of our world.

**Human Geography**

The physical world is only one part of the puzzle of geography. People are also part of the world. **Human geography** is the study of the world's human geographic features—people, communities, and landscapes. It is the second major branch of geography.

**The Human World** Put simply, human geographers study the world's people, past and present. They look at where people live and why. They ask why some parts of the world have more people than others, and why some places have almost no people at all.

**Reading Check**  
Identify Points of View  
What are some features in your area that a physical geographer might study?

**Teach the Main Idea**

Human geography focuses on people, their cultures, and the landscapes they create.

**Recall** What are some needs common to all people?  
*food, water, shelter, dealing with others*

**Draw Conclusions** Why do human geographers often specialize in a smaller area of study?  
*People's lives are so different that no one can study every aspect.*

**More About . . .**

**Connect to Today: Helping Others** The work of Heifer International, an organization whose mission is to end hunger, is an example of human geography in practice. The organization donates animals so that people can work the land and improve their situation. "Heifer's Cornerstones" include: the community deciding together what animals and help they want, training people to feed and shelter the animals, and having people pass on offspring of animals so others can benefit.

**BIOGRAPHY****Eratosthenes**

Have students read the biography of Eratosthenes and then answer the associated question.

**Generalize** Why is Eratosthenes called the Father of Geography? *He made many contributions to the field, including being the first to use the term geography.*

**READING CHECK**

**Identify Points of View** What are some features in your area that a physical geographer might study? *Answers will vary, but should include features related to land, soils or plants, weather or climate, and any bodies of water in your area.*

**ONLINE GRAPHIC ORGANIZER****The Branches of Geography**

As students read the lesson, have them use the graphic organizer to take notes. Students can review their graphic organizer notes at the end of the lesson to answer the following question:

**Compare and Contrast** What are the main differences between physical geography and human geography? *Physical geography studies the geographic features like landforms, climate, bodies of water, and plants; human geography studies people, communities, and landscapes.*

**ONLINE LESSON FLIP CARDS****Review Key Terms and Places**

Students can use the flip cards in the Lesson Review at any time to review the lessons key terms and places: **physical geography, human geography, cartography, meteorology.**

## Teach the Main Idea

Other branches of geography examine specific aspects of the physical or human world.

**Explain** How do smaller fields of geography relate to the two main branches of geography? *Some are branches of physical or human geography.*

**Define** What is hydrology? *the study of water on Earth*

**Draw Conclusions** If you were telling someone about the study of geography, which branches—along with the two main branches, physical and human—would deserve particular mention?

*Possible responses may include economic geography, urban geography, cartography, hydrology, and meteorology.*

### More About . . .

**Connect to Geography: Victoria Falls** Victoria Falls, on the Zambezi River bordering Zambia and Zimbabwe, is one of the seven natural wonders of the world. It is the largest known “curtain of water.” Here, the mild river, about 2 km (1.2 miles) wide, plummets into a narrow gorge about 100 m (328 feet) deep, causing a thunderous roar and a towering spray. In the 1850s, Scottish missionary and physician David Livingstone reported the falls to the outside world. He named them for Queen Victoria. The local people call the falls “Mosi-oa-Tunya” which means “smoke that thunders.”

**Connect to History: Telegraph** The invention of the telegraph (a system of sending coded messages over wires using electricity) in the 19th century was important in the development of the field of meteorology. People had been observing and recording the weather long before the telegraph's invention (in daily farm journals, for example). But the telegraph enabled collecting, plotting, and analyzing weather observations from different places in a more timely manner. Today's computers have made this process even faster and more accurate, but the basic process is still the same—collecting weather data and analyzing it to make predictions.

### READING CHECK

**Summarize** What do human geographers study?  
*people, communities, and landscapes*

Human geographers also study what people do. What jobs do people have? What crops do they grow? What makes them move from place to place? These are the types of questions that geographers ask about people around the world.

Because people's lives are so different in different places, no one can study every aspect of human geography. As a result, human geographers often specialize in a smaller area of study. Some may choose to study only the people and landscapes in a certain region. For example, a geographer may study only the lives of people who live in West Africa.

Other geographers choose not to limit their studies to one place. Instead, they may choose to examine only one aspect of people's lives. For example, a geographer could study only economics, politics, or city life. However, that geographer may compare economic patterns in various parts of the world to see how they differ.

**Uses of Human Geography** Although every culture is different, people around the world have some common needs. All people need food and water. All people need shelter. All people need to deal with other people in order to survive.

Human geographers study how people in various places address their needs. They look at the foods people eat and the types of governments they form. The knowledge they gather can help us better understand people in other cultures. Sometimes, this type of understanding can help people improve their landscapes and situations.

On a smaller scale, human geographers can help people design their cities and towns. By understanding where people go and what they need, geographers can help city planners place roads, shopping malls, and schools. Geographers also study the effect people have on the world. As a result, they often work with private groups and government agencies that want to protect the environment.

**Partnering with Archaeology and History** Human geography can also help other types of social scientists, such as archaeologists. Archaeologists engage in digs and study artifacts and features in a particular location. They gather evidence about groups of people and how those groups lived at particular times in history. The human geography of a place is part of archaeologists' gathered evidence.

Human geography also contributes to the work of historians. Historians use archaeological, geographical, and other types of evidence to investigate patterns in history. They identify turning points. A turning point can be an event, era, or development in history that brought about social, cultural, ecological, political, or economic change. The geography of places can affect historic turning points.

### Other Fields of Geography

Physical geography and human geography are the two largest branches of the subject, but they are not the only ones. Many other fields of geography exist, each one devoted to studying one aspect of the world.

## Geography

Geography is the study of Earth's physical and human geographic features.



### Physical Geography

The study of Earth's physical geographic features, including rivers, mountains, oceans, weather, and other features, such as Victoria Falls in southern Africa

### Human Geography

The study of Earth's people, including their ways of life, homes, cities, beliefs, and customs, like those of these children in Malawi, a country in Central Africa

Most of these fields are smaller, more specialized areas of either physical or human geography. For example, economic geography—the study of how people make and spend money—is a branch of human geography. Another specialized branch of human geography is urban geography, the study of cities and how people live in them. Physical geography also includes many fields, such as the study of climates. Other fields of physical geography are the studies of soils and plants.

**Cartography** One key field of geography is **cartography**, the science of making maps. Without maps, geographers would not be able to study where things are in the world. In addition to locations, maps can display other information about people, places, and environments. Cartographers decide which information to include on a given map and how it is displayed.

In the past, cartographers always drew maps by hand. Many of those maps were not very accurate. Today, though, most maps are made using computers and satellite images. Through advances in mapmaking, we can make accurate maps on almost any scale, from the whole world to a single

## TIERED ACTIVITY

### Create a Biography of William Morris Davis

**Below Level** Have students research biographical information on William Morris Davis, the “father of American geography.” Students’ biographies should include dates of birth and death and a statement about why Davis is important.

**At Level** Going beyond the Below Level activity, biographies should

- be based on at least three reliable sources, including one print source
- explain the role he played in establishing geography as an academic discipline

**Above Level** Going beyond the Below and At Level activities, biographies should

- summarize Davis’ “geographical cycle” theory
- analyze modern geographers’ views on Davis’ theories

\*Alternative Assessment Handbook, Rubric 37: Writing Assignments

## ► ONLINE DOCUMENT-BASED INVESTIGATION

### Computer Mapping

The image and text explain how computers help cartographers make maps quickly and easily. Have students read the feature, then answer the associated question.

**Analyze Sources** How are today's maps different from those created in the past? *Today's maps are often made by computer instead of by hand, so they can be more accurate and complex.*

In print edition, see Connect to Technology of same title.

**Contrast** How are today's maps different from those created in the past? *Today's maps are often made by computer instead of by hand, so they can be more accurate and complex.*

### Connect to Technology

#### Computer Mapping

In the past, maps were drawn by hand. Making a map was a slow process. Even the simplest map took a long time to make. Today, however, cartographers have access to tools people in the past—even people who lived just 50 years ago—never imagined. The most important of these tools are computers.

Computers allow us to make maps quickly and easily. In addition, they let us make new types of maps that people could not make in the past.

The map shown here, for example, was drawn on a computer. It shows the number of computer users in the United States who were connected to the Internet on a particular day. Each of the lines that rises off of the map represents a city in which people were using the Internet. The color of the line indicates the number of computer users in that city. As you can see, this data resulted in a very complex map.



Making such a map required cartographers to sort through huge amounts of complex data. Such sorting would not have been possible without computers.

#### Contrast

How are today's maps different from those created in the past?

neighborhood, and keep them up to date. These maps are not only used by geographers. For example, road maps are used by people who are planning long trips.

**Hydrology** Another important branch of geography is hydrology, the study of water on Earth. Geographers in this field study the world's river systems and rainfall patterns. They study what causes droughts and floods and how people in cities can get safe drinking water. They also work to measure and protect the world's supply of water.

**Meteorology** Have you ever seen the weather report on television? If so, you have seen the results of another branch of geography. This branch is called **meteorology**, the study of weather and what causes it. Meteorologists use computers to follow and predict weather.

Meteorologists study weather patterns in a particular area. Then they use the information to predict what the weather will be like in the coming

14 Module 1



Geographers can choose to work in many different kinds of jobs. Do you know who is who?

**Start**

### STRUGGLING READERS

#### Understand Computer Mapping

1. Read aloud the "Computer Mapping" information, and have students follow along.
2. Ask students what the main point is. Check to make sure they understand that computers help people to make better maps.
3. Ask questions based on the reading. Have students locate and read the answer aloud.

\*Alternative Assessment Handbook, Rubric 18: Listening

### SPECIAL NEEDS STUDENTS

#### Create a Geography Puzzle

1. Give each student a picture of a place, such as a desert, farm, or city. Have them draw a seven-piece jigsaw puzzle over the picture and cut out the pieces.
2. Have students label each shape with a geography term from this section.
3. Have students trade with a partner and assemble their puzzles. Talk about how the pieces (and geography terms) fit together.

**Reading Check**  
Find Main Ideas  
What are some major branches of geography?

days. Their work helps people plan what to wear and what to do on any given day. At the same time, their work can save lives by predicting the arrival of terrible storms. These predictions are among the most visible ways in which the work of geographers affects our lives every day.

**Summary and Preview** In this lesson you learned about two main branches of geography—physical and human. Next, you will learn about two systems geographers use to organize their studies.

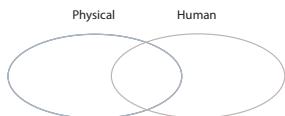
**Lesson 2 Assessment**

**Review Ideas, Terms, and Places**

1. a. **Define** What is physical geography?  
b. **Explain** Why do we study physical geography?
2. a. **Identify** What are some things that people study as part of human geography?  
b. **Summarize** What are some ways in which the study of human geography can influence our lives?  
c. **Evaluate** Which do you think would be more interesting to study: physical geography or human geography? Why?
3. a. **Identify** What are two specialized fields of geography?  
b. **Analyze** How do cartographers contribute to the work of other geographers?

**Critical Thinking**

4. **Compare and Contrast** Draw a diagram like the one shown here. In the left circle, list three features of physical geography from your notes. In the right circle, list three features of human geography. Where the circles overlap, list one feature they share.



**READING CHECK**

**Find Main Ideas** What are some major branches of geography? *The two main branches are physical and human, with some major branches including cartography, hydrology, and meteorology.*

## Print Assessment

### Review Ideas, Terms, and Places

1. a. **Define** What is physical geography? *study of world's landforms, water bodies, other physical features*  
b. **Explain** Why do we study physical geography? *to learn how the physical world works and to help us prepare for changes*
2. a. **Identify** What are some things that people study as part of human geography? *people past or present, where they live and why, their jobs/crops/movements*  
b. **Summarize** What are some ways in which the study of human geography can influence our lives? *better understand other cultures, improve landscapes, design cities and towns, protect environments*  
c. **Evaluate** Which do you think would be more interesting to study, physical geography or human geography? Why? *Possible answer: physical, because you learn about why features are the way they are; human, because you understand people better*
3. a. **Identify** What are two specialized fields of geography? *cartography, meteorology*  
b. **Analyze** How do cartographers contribute to the work of other geographers? *They make maps that other geographers use to study different aspects of the world.*

### Critical Thinking

4. **Compare and Contrast** Draw a Venn diagram. In the left circle, list three features of physical geography from your notes. In the right circle, list three features of human geography. Where the circles overlap, list one feature they share. Possible answer: *physical—landforms, water, climate; human—people, communities, landscape; both—help us understand the world better*

## ► Online Assessment

1. Which of the following would a physical geographer measure?
  - the population of cities
  - the temperature of places
  - the number of crops grown
  - the number of goods exported

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Physical geographers want to know why various parts of the world have different **weather** patterns.

2. How do human geographers help people to make comparisons among cultures?
  - by using evidence to identify patterns and turning points in history
  - by discovering artifacts in different locations that show how people lived
  - by helping planners make decisions about the designs of cities and towns
  - by providing information about how people in various places meet their needs

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Human geographers can best help people to understand unfamiliar **cultures**.

3. Which of the following can be influenced by the work of meteorologists?
  - what crops people grow
  - what maps people make
  - what clothes people wear
  - what structures people build

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Meteorology is the study of **weather** and what causes it.

4. **Draw Conclusions** How can knowledge of physical geography help to keep people safe?

*Physical geography includes the study of storms and what causes them. This knowledge can help keep people safe by allowing them to prepare for these weather events.*

5. **Make Generalizations** Why do human geographers often focus on one small area of study?

*Human geographers study what people do, and what people do can be very different in different places. Because no one can study all of these differences, human geographers often focus on one small area of study, such as urban life.*

6. **Cause and Effect** Why are maps made today more accurate than maps made in the past?

*Maps made in the past were always drawn by hand, and many of them were not very accurate. Maps today are created using computers and satellite images, which makes them very accurate.*

## ADDITIONAL INSTRUCTIONAL MATERIALS

continued from page 11

### ENGLISH LANGUAGE LEARNERS

#### Analyze People's Diets

1. Explain that studying what people eat can help us understand other people and cultures.
2. On the board, make four columns: *animal, vegetable, fruit, and grain*. Ask volunteers to tell one food they ate the day before and point to the category that food fits.
3. Have students use their own words to write two sentences explaining what foods can tell us about other cultures.

\*Alternative Assessment Handbook, Rubric 38: Writing to Classify

### ADVANCED/GIFTED

#### Research Earth's Size

1. Have students do Internet or library research to learn how Eratosthenes determined Earth's size. Ask them to organize their findings about his process using a graphic organizer or chart.
2. Have students create a labeled poster or 3-D display to explain the process Eratosthenes used.

\*Alternative Assessment Handbook, Rubrics 28: Posters; and 30: Research

continued from page 12

### ENGLISH LANGUAGE LEARNERS

#### Make a Geography Chart

1. To help students understand how physical geography and human geography are related, have them create a chart with two columns labeled "Physical Geography" and "Human Geography."
2. Have students think about a region in which they live or have visited, and in the first column list the physical geographic features of that region. They could include such things as bodies of water, landforms, climate, or weather.
3. In the second column, have students list the human geographic features of the region. They could include such things as homes, crops, jobs, or movement.
4. In pairs or as a class, have students discuss how the physical geographic features of the region may affect the human geographic features and vice versa.

\*Alternative Assessment Handbook, Rubrics 7: Charts; and 11: Discussions

### COLLABORATIVE LEARNING

#### Discuss the Main Branches of Geography

1. Organize the class into pairs of students. One member of the pair makes a statement about one of the main branches of geography—physical or human geography.
2. The second student rephrases what the first said, then makes a related statement.
3. The first student then repeats what the second student did. This pattern of statement-paraphrase-statement continues for a few rounds.
4. Check accountability by randomly calling on students to relate what was said, particularly something said by the partner (and what the student said in response).

\*Alternative Assessment Handbook, Rubric 18: Listening



# Themes of Geography



## ► Online Lesson 3 Enrichment Activities

### Mental Maps

**Article** Students read about the concept of mental mapping and then sketch a representation of their own mental map of their school.

### Geography Awareness Week

**Article** Students read how several different geographers' professional organizations came together to create Geography Awareness Week to promote the study of geography. Then they design four to six activities for younger students to encourage geographic knowledge and skills, relating these activities to the Themes, Essential Elements, or Geography Standards they have learned.

## Teach the Big Idea

### 1. Whole Class Open/Introduction

If YOU lived there ...

#### What might help your sister find the house?

Review the scenario with students and lead a class discussion around responses to the question. Remind students that all responses are valid as long as they are supported with valid reasoning. You may wish to review the following points to frame your discussion.

#### Consider reasons to use a MAP:

- to find the street where your friend lives
- to locate the public library
- to find any main roads that go across town

#### Consider reasons to use LANDMARKS:

- to find the right neighborhood
- to better understand the layout of the town
- to try to remember the area by sight for any future trips

**2. Direct Teach** Introduce the Big Idea: *Geographers have created two different but related systems for organizing geographic studies.* Read these two sentences to students: *My house is close to the school. Maria's house is on the corner of Fourth Avenue and Main Street.* Ask students which description would better help them find the house that is mentioned. Why? Have students offer some other ways to describe or share locations.

**3. Practice/Assess/Inquire** Organize students into groups. Each group will create a brochure introducing the school's buildings and grounds to a new student. Have groups organize their brochures by geography theme and write or draw information about the school related to that theme. Then have students review the essential elements. If an element relates to a theme, students should add that information to their brochures.

**4. Explore (Collaborative Exploration)** As a class, discuss how this project illustrates the "Uses of Geography" element. Display the brochures in the classroom.

**5. Whole Group Close/Reflect** Have students repeat this project using as a subject their home, yard, or another place of their choosing.

\*Alternative Assessment Handbook, Rubric 19: Magazines

### ONLINE DOCUMENT-BASED INVESTIGATION

#### A Geographer's World

Organizing Geographic Information is the third of six document-based investigations that students will analyze in A Geographer's World. The Five Themes of Geography carousel describes and illustrates the five themes that students can use to organize the information they learn.

## Themes of Geography

If YOU lived there ...

Your older sister has offered to drive you to a friend's house across town, but she doesn't know how to get there. You know your friend's street address and what the apartment building looks like. You know it's near the public library. You also would recognize some landmarks in the neighborhood, such as the gas station and the supermarket.

#### What might help your sister find the house?

### The Five Themes of Geography

Geographers use themes, or ideas, in their work. These geography themes can be applied to nearly everything that geographers study. The five major themes of geography are Location, Place, Human-Environment Interaction, Movement, and Regions.

**Location** Every point on Earth has a location, a description of where it is. This location can be expressed in many ways. Sometimes a site's location is expressed in specific, or absolute, terms, such as an address. For example, the White House is located at 1600 Pennsylvania Avenue in the city of Washington, DC. A specific description like this one is called an **absolute location**. Other times, the site's location is expressed in general terms. For example, Canada is north of the United States. This general description of where a place lies is called its **relative location**.

**Place** Another theme, Place, is closely related to Location. However, Place does not refer simply to where an area is. It refers to the area's landscape, the features that define the area and make it different from other places. Such features could include land, climate, and people. Together, they give a place its own character.

**Human-Environment Interaction** In addition to looking at the features of places, geographers examine how those features interact. In particular, they want to understand how people interact with their environment—how people and their physical environment affect each other. An area's **environment** includes its land, water, climate, plants, and animals.

### ONLINE GRAPHIC ORGANIZER

#### Themes of Geography

As students read the lesson, have them use the graphic organizer to take notes. Students can review their graphic organizer notes at the end of the lesson to answer the following question:

**Summarize** How do the Five Themes of Geography and the Six Essential Elements and standards work together? *The themes, essential elements, and standards work together to identify the most important ideas in the study of geography.*

### ONLINE LESSON FLIP CARDS

#### Review Key Terms and Places

Students can use the flip cards in the Lesson Review at any time to review the lessons key terms and places: **absolute location, relative location, environment**.

### The Five Themes of Geography

Geographers use five major themes to organize and guide their studies: Location, Place, Human-Environment Interaction, Movement, and Regions.



### ENGLISH LANGUAGE LEARNERS

#### Describe Images

- To help students apply their understanding of the five themes of geography, have students select one of the picture captions to read aloud and describe to a partner.
- Then have students write two paragraphs independently. The first paragraph should start, "In this picture you see..." and should describe what they see in the picture. The second paragraph should start, "The geography theme this picture shows is..." and should explain the how the picture is representative of the theme.

\*Alternative Assessment Handbook, Rubric 40: Writing to Describe

### Teach the Main Idea

The five themes of geography help us organize our studies of the world.

**Explain** How are the five themes of geography helpful to geographers? *can be applied to nearly everything geographers study; helps geographers organize their work*

**Identify** What are some common interactions between people and their environments? *agriculture, fishing, building a place to live*

**Analyze** Which one of the following does not belong: location, place, human-environment interaction, language, movement, regions? *language—not one of the five themes of geography*

**Elaborate** Why do you think it is helpful to use themes for studying geography? *Possible answer: helps you remember to consider all important aspects; helps to compare and contrast studies of different places by looking at the same topics*

#### More About . . .

**Lots of Land?** According to "The World Factbook" at the CIA Web site, the total land area of the world is 148.94 million square kilometers (km), or 57.51 million square miles. Of that land, only 10.43% is arable (fit for or used for growing crops).

### ONLINE DOCUMENT-BASED INVESTIGATION

#### Organizing Geographic Information

The carousel describes and illustrates the five themes of geography that help students organize information. Have students navigate through the carousel and note the five themes of geography.

**Analyze Sources** How might referring to the five themes of geography help you when you are studying a new place? *Possible answer: Referring to the five themes of geography might help me to make sure I think about all the different aspects of studying a new place.*

In print edition, see feature titled The Five Themes of Geography.

**Analyze Visuals** Which of the five themes deals with the relationships between people and their surroundings? *Human-environment interaction deals most directly with this theme.*

#### The Five Themes of Geography



Location

The theme of location describes where something is. The mountain shown here, Mount Rainier, is in west-central Washington.

## Teach the Main Idea

The six essential elements of geography highlight some of the subject's most important ideas.

**List** What are the six essential elements of geography? *world in spatial terms, places and regions, physical systems, human systems, environment and society, uses of geography*

**Analyze** How do the national geography standards and the six elements of geography relate to each other? *each element is a big idea that links several standards together*

**Evaluate** How useful do you think it is to identify themes and elements in the study of geography or another subject? *Possible answer: very useful, since it lets people use one system to compare findings and to communicate results*

### READING CHECK

**Find Main Ideas** What are the five themes of geography? *location, place, human-environment interaction, movement, regions*

People interact with their environment every day in all sorts of ways. They clear forests to plant crops, level fields to build cities, and dam rivers to prevent floods. At the same time, physical environments affect how people live. People in cold areas, for example, build houses with thick walls and wear heavy clothing to keep warm. People who live near oceans look for ways to protect themselves from storms.

**Movement** People are constantly moving. They move within cities, between cities, and between countries. Geographers want to know why and how people move. For example, they ask if people are moving to find work or to live in a more pleasant area. Geographers also study the roads and routes that make movement so common.

**Regions** You have already learned how geographers divide the world into many regions to help the study of geography. Creating regions also makes it easier to compare places. Comparisons help geographers learn why each place has developed the way it has.

### Geography's Themes, Essential Elements, and Standards

Themes of Geography	Essential Elements	Geography Standards
<b>Location</b> The theme of Location describes where something is.	The World in Spatial Terms	1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective 2. How to use mental maps to organize information about people, places, and environments in a spatial context 3. How to analyze the spatial organization of people, places, and environments on Earth's surface
<b>Place</b> Place describes the features that make a site unique. <b>Regions</b> Regions are areas that share common characteristics.	Places and Regions	4. The physical and human characteristics of places 5. How people create regions to interpret Earth's complexity 6. How culture and experience influence people's perceptions of places and regions
<b>Movement</b> This theme looks at how and why people and things move. <b>Human-Environment Interaction</b> People interact with their environment in many ways.	Physical Systems Human Systems	7. The physical processes that shape the patterns of Earth's surface 8. The characteristics and spatial distribution of ecosystems on Earth's surface 9. The characteristics, distribution, and migration of human populations on Earth's surface 10. The characteristics, distribution, and complexity of Earth's cultural mosaics 11. The patterns and networks of economic interdependence on Earth's surface 12. The processes, patterns, and functions of human settlement 13. How the forces of cooperation and conflict among people influence the division and control of Earth's surface 14. How human actions modify the physical environment 15. How physical systems affect human systems 16. Changes that occur in the meaning, use, distribution, and importance of resources
	The Uses of Geography	17. How to apply geography to interpret the past 18. How to apply geography to interpret the present and plan for the future

18 Module 1

### LINK TO LANGUAGE ARTS

#### Draw Conclusions

- Review with students the five themes of geography and the kind of information each theme helps you learn.
- Ask students to imagine that they lived in your area several hundred years ago and have somehow ended up in that same spot today. Brainstorm with students about what might seem different.
- Have each student use standard English to write a journal entry as if they were such a person, describing one day from start to finish. Journal entries should include observations related to each of the five themes. Encourage students to describe what the person might feel, how he or she might try to make sense of the changes, and possible conflicts or funny situations.

- Ask for volunteers to read their entries aloud. For each entry, discuss what information relates to each theme. As a class, discuss any necessary corrections to the sentences to align them with standard English usage.

\*Alternative Assessment Handbook, Rubric 39: Writing to Create

## The Six Essential Elements

The five themes of geography are not the only system geographers use to study the world. They also use a system of essential **elements** and national standards. Together, these themes, essential elements, and standards identify the most important ideas in the study of geography. Refer to the chart on the previous page.

The geography standards are 18 basic ideas that are central to the study of geography. The essential elements are based on the geography standards and act as a bridge between the themes and standards. Each element links several standards together. The six essential elements are The World in Spatial Terms, Places and Regions, Physical Systems, Human Systems, Environment and Society, and The Uses of Geography.

Read through that list again. Do you see any similarities between geography's six essential elements and its five themes? You probably do. The two systems are very similar because the six essential elements build on the five themes.

For example, the element Places and Regions combines two of the five themes of geography—Place and Regions. Also, the element called Environment and Society deals with many of the same issues as the theme Human-Environment Interaction.

There are also some basic differences between the essential elements and the themes. For example, the last element, The Uses of Geography, deals with issues not covered in the five themes. This element examines how people can use geography to plan the landscapes in which they live.

Throughout this book, you will notice references to both the themes and the essential elements. As you read, use these themes and elements to help you organize your own study of geography.

**Summary and Preview** You have just learned about the themes, elements, and standards of geography. In the next lesson, you will learn about the tools geographers use.

**Reading Check**  
Summarize  
What are the six  
essential elements of  
geography?

### Lesson 3 Assessment

#### Review Ideas, Terms, and Places

- Contrast** How are the themes of Location and Place different?
- Elaborate** How does using the five themes help geographers understand the places they study?
- Identify** Which of the five themes of geography is associated with airports, highways, and the migration of people from one place to another?
- Explain** How are the geography standards and the six essential elements related?
- Compare** How are the six essential elements similar to the five themes of geography?
- Recall** To which essential element does the theme of Location relate?

#### Critical Thinking

- Categorize** Draw a chart like the one below. Use your notes to list the five themes of geography, explain each of the themes, and list one feature of your city or town that relates to each.

Theme				
Explanation				
Feature				

### COLLABORATIVE LEARNING

#### Compare Mental Maps

- Discuss mental maps with students. Be sure they understand that these are people's internal map of their world and that they can include a variety of features a person notices.
- Have each student list the features of his or her internal map for the route he or she takes to school. Encourage students to include all features, even those not commonly seen on a map.

- Organize students in pairs or groups of three. Draw a two-circle and a three-circle Venn diagram on the board. Have each pair or group copy the appropriate diagram onto their own paper. Then have them list all the features from their mental maps in the appropriate spaces.
- As a class, discuss which features were most common. Discuss whether people of other ages would have similar mental maps.

\*Alternative Assessment Handbook, Rubric 13:  
Graphic Organizers

### READING CHECK

**Summarize** What are the six essential elements of geography? *world in spatial terms, places and regions, physical systems, human systems, environment and society, uses of geography*

## Print Assessment

### Review Ideas, Terms, and Places

- Contrast** How are the themes of Location and Place different? *location—description of where a point on Earth is; place—physical and human features that define an area/its character*
- Elaborate** How does using the five themes help geographers understand the places they study? *Possible answer: It lets them study a place from many points of view and compare it to other places using the same system.*
- Identify** Which of the five themes of geography is associated with airports, highways, and the migration of people from one place to another? *movement*
- Explain** How are the geography standards and the six essential elements related? *The elements build on the five themes but also expand upon them.*
- Compare** How are the six essential elements similar to the five themes of geography? *Both are systems geographers use to study the world.*
- Recall** To which essential element does the theme of Location relate? *The World in Spatial Terms*

### Critical Thinking

- Categorize** Draw a chart. Use your notes to list the five themes of geography, explain each of the themes, and list one feature of your city or town that relates to each. *Students' charts will vary but should show that they can apply knowledge of each theme to their city or town's characteristics.*

## ► Online Assessment

1. Which of the following statements relates to the theme of Place?
  - People move to find work or to live in a more pleasant area.
  - People clear forests to plant crops and level fields to build cities.
  - Washington, DC is our nation's capital and has many great monuments.
  - The White House is located at 1600 Pennsylvania Avenue in the city of Washington, DC.

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

The theme **place** 

2. Which essential element is connected to the themes of Movement and Human-Environment Interaction?

- Physical Systems
- Places and Regions
- The Uses of Geography
- The World in Spatial Terms

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

The essential element of **Human Systems** 

3. **Make Generalizations** How do physical environments affect how people live? Describe **two** ways.

*People who live in cold climates build houses with thick walls and wear specific types of clothes to keep them warm. People who live near oceans develop ways to protect themselves from the storms that frequently occur in these areas.*

4. **Summarize** How do the essential elements help with the study of geography?

*The essential elements, which are based on the national geography standards, act as a bridge between the five themes of geography and the national standards. Each element is connected to one or more of the themes and links several standards together.*





# The Geographer's Tools



## ► Online Lesson 4 Enrichment Activities

### Making Art with GPS

**Video** Students watch a video about a Canadian bicyclist who plots bicycle routes on a map to create an image then hops on his bike to ride. Then they create an image superimposed on a local map following the layout of the streets.



### Improving Map Technology

**Video** Students watch a video about a weather mapping satellite, then create an advertisement that explains what the satellite does and how it is an improvement over other weather satellites.

### Watch Channel One News



## Teach the Big Idea

### 1. Whole Class Open/Introduction

If YOU lived there ...

Can you think of a tool the plumber might use for this job?

Review the scenario with students and lead a class discussion around responses to the question. Remind students that all responses are valid as long as they are supported with valid reasoning. You may wish to review the following points to frame your discussion.

#### Consider reasons to use an ADJUSTABLE WRENCH:

- It can be set to adapt to any size pipe.
- It can be used to tighten the joints where the pipe is leaking.

#### Consider reasons to use a CLAMP:

- It can cover the section of the pipe where the leak is occurring.
- It might solve the problem quickly and inexpensively.

2. Direct Teach Introduce the Big Idea: *Geographers use many tools to study the world.* Ask students if a hammer would be a good tool for the plumber to use on the pipe. Why or why not? Do some tools have different functions than others?

3. Practice/Assess/Inquire Organize students into groups. Provide each group with a map of the United States, a globe, and a table listing the ten largest cities in the world. Then ask each group to use these tools to determine (a) the capital of Nebraska; (b) two countries that are located south of the Equator; and (c) the third-largest city in the world.

4. Explore (Collaborative Exploration) As a class, discuss which tools were used to answer each question and how this activity illustrates "The Geographer's Tools" element.

5. Whole Group Close/Reflect Have students generate additional questions that could be answered using the tools they were given. Encourage students to think about other tools that could be useful to geographers as they work through the lesson.

\*Alternative Assessment Handbook, Rubric 35: Solving Problems

## Lesson 4

# The Geographer's Tools

If YOU lived there ...

Your family's apartment has a leaking pipe under the kitchen sink. The landlord has sent a plumber to your apartment to fix the leak. The plumber arrives carrying a tool chest. You know that plumbers need specific tools to do their jobs correctly.

Can you think of a tool the plumber might use for this job?

## Maps and Globes

Like all people with jobs to do, geographers need tools to study the world. The tools that geographers use most often in their work are maps and globes. A **map** is a flat drawing that shows all or part of Earth's surface. A **globe** is a spherical, or ball-shaped, model of the entire planet.

Both maps and globes show what the world looks like. They can show where mountains, deserts, and oceans are. They can also identify and describe the world's countries and major cities.

There are, however, major differences between maps and globes. Because a globe is spherical like Earth, it can show the world as it really is. A map, though, is flat. It is not possible to show a spherical area perfectly on a flat surface. To understand what this means, think about an orange. If you took the peel off of an orange, could you make it lie completely flat? No, you could not, unless you stretched or tore the peel first.

The same principle is true with maps. To draw Earth on a flat surface, people have to distort, or alter, some details. For example, places on a map might look to be farther apart than they really are, or their shapes or sizes might be changed slightly.

Still, maps have many advantages over globes. Flat maps are easier to work with than globes. Also, it is easier to show small areas like cities on maps than on globes. In addition, maps usually show more information than globes. Because globes are more expensive to make, they do not usually show anything more than where places are and what features they have.

20 Module 1

## ONLINE GRAPHIC ORGANIZER

### The Geographer's Tools

As students read the lesson, have them use the graphic organizer to take notes. Students can review their graphic organizer notes at the end of the lesson to answer the following question:

**Draw Conclusions** Why do you think geographers need to use so many different types of tools? *because each tool matches the type of geographical data that needs to be described or documented*

## ONLINE LESSON FLIP CARDS

### Review Key Terms and Places

Students can use the flip cards in the Lesson Review at any time to review the lessons key terms and places: **map**, **globe**, **Global Positioning System (GPS)**, **Geographic Information Systems (GIS)**.

## ONLINE DOCUMENT-BASED INVESTIGATION

### A Geographer's World

The Geographer's Tools is the fourth of six document-based investigations that students will analyze in A Geographer's World. Images and descriptions of a map and a globe explain two of the important tools geographers use.

**Reading Check**  
Summarize  
What are the tools  
geographers most  
often use?

Maps, on the other hand, can show all sorts of information. Besides showing land use and cities, maps can include a great deal of information about a place. A map might show what languages people speak or where their ancestors came from. Maps like the one below can even show how many students in an area play soccer.

### The Geographer's Tools

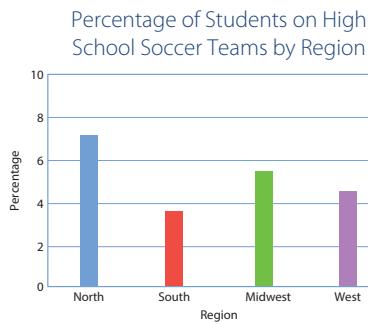
Geographers use many tools to study the world. Each tool provides part of the information a geographer needs to learn what a place is like.



Maps usually give geographers more information about a place than globes do. This map, for example, shows rates of soccer participation in the United States.



A geographer can use a globe to see where a place, such as the United States, is located.



Charts and graphs are also tools geographers can use to study information. They are often used when geographers want to compare numbers, such as the number of students who play soccer in each region of the country.

**Analyze Visuals**  
What information could you learn from each of these tools?

### ENGLISH LANGUAGE LEARNERS

#### Create a Map of the School

- To help students apply their understanding of the information included in maps, have them create maps of their school. They may choose to include such details as bus stops, classrooms, playgrounds, the cafeteria, or the principal's office.
- Have students include symbols in different locations on their maps to represent the activities that take place there. Have them create a legend to explain what each symbol represents.

- After the maps are complete, have students share them with a partner and describe the features they have chosen to include.
- As a class, discuss how students' maps were similar and different from each other. Discuss why a map might be a more appropriate tool than a globe to represent a school. Discuss how a geographer might make use of GPS or GIS when planning where and how to build a new school.

\*Alternative Assessment Handbook, Rubrics 20: Map Creation and 11: Discussions

### Teach the Main Idea

Maps and globes are the most commonly used tools of geographers.

**List** What are some reasons that geographers might make maps? *show land use and cities; show information such as languages, where ancestors came from, people's activities*

**Explain** Why are maps not completely accurate in how they show Earth? *not possible to show a round, 3-D area (Earth) perfectly on a flat surface (map)*

**Infer** What tool would be best for seeing how the sizes of Earth's continents compare to each other? *globe*

**Draw Conclusions** Which tool do geographers use most often: maps or globes? Why? *Maps, because they usually give geographers more information about a place than globes do.*

### ONLINE DOCUMENT-BASED INVESTIGATION

#### The Geographer's Tools

The images show two of the helpful tools that geographers use, a map and a globe.

Have students compare the images and think about how each tool is used.

**Analyze Sources** What information could you learn from each of these tools? *the location of a place and the activities of people who live there*

In print edition, see feature of same title.

**Analyze Visuals** What information could you learn from each of these tools? *the location of a place and the activities of people who live there*

#### The Geographer's Tools

Geographers use many tools to study the world. Each tool provides part of the information a geographer needs to learn what a place is like. Below are the tools used most often.

**Maps**  
Maps usually give geographers more information about a place than globes do. This map, for example, shows rates of soccer participation in the United States.



#### READING CHECK

**Summarize** What are the tools geographers most often use? *maps and globes*

For additional instruction, go to end of lesson.

## Teach the Main Idea

Many geographers study information gathered by satellites.

**Recall** How are satellites useful to geographers?

*They collect information we cannot see from Earth's surface; they also show what an area looks like from far above.*

**Explain** How does GPS technology work? *The system uses 24 satellites to transmit information about the exact locations of given objects to Earth; that information is displayed on a small receiver.*

**Draw Inferences** How might GPS technology be used by police departments? *Possible answers: to locate stranded motorists, to find the most direct route to an emergency situation*

More About . . .

### Connect to Technology: Global Positioning System

**System** The process of mapping has changed with the advent of computers and technology. The Global Positioning System (GPS) is a network of satellites and receiving devices used to determine the location of something on Earth. The receivers provide location in latitude, longitude, and altitude. GPS includes many satellites that circle the planet. They are constantly sending out radio signals.

Aircraft, ships, and trains all use GPS to navigate, as do regular cars that have GPS built into their dashboards. GPS plots the constantly changing location of a vehicle on an electronic map, and the map provides directions to a destination. There are now many products on the market that use global positioning technology.

#### Reading Check

Summarize

What satellite technology transmits data to people with receivers?

## Satellites

Maps and globes are not the only tools that geographers use in their work. As you have already read, many geographers study information gathered by satellites.

Much of the information gathered by these satellites is in the form of images. Geographers can study these images of Earth to see what an area looks like from far above. Satellites also collect information that we cannot see from the planet's surface. The information gathered by satellites helps geographers make accurate maps.

Satellites also collect and transmit information for a technology called

**Global Positioning System (GPS).** The system uses 24 satellites to transmit information to Earth. This GPS information gives the exact location of a given object on our planet. The information is displayed on a small receiver. Vehicle drivers are some of the people who use GPS to find out how to get from where they are to other locations. There are many other uses of GPS. These include locating people in need of rescue on boats or in the wilderness. Scientists also use GPS to track and study wildlife.



## Other Geographic Tools

Geographers also use many other tools. To depict aspects of various countries and world regions, geographers create graphs, charts, databases, and models. They also use these tools to gather data and compare various world regions.

There is a geography tool that is made up of a group of databases. It is called **Geographic Information System (GIS)**. GIS combines and provides information from many different sources. People use GIS by posing

22 Module 1

### READING CHECK

**Summarize** What satellite technology transmits data to people with receivers? *Global Positioning System (GPS)*

### ADVANCED/GIFTED

#### Working as a Geographer

1. Ask students to imagine that they are working as a geographer. They have been asked to determine population growth in the United States from 1960 to 2010.

2. Have students write a preliminary report in which they determine which geographer's tools they will need to complete the assignment. In their report, they should explain why these tools will help them in their work.

\*Alternative Assessment Handbook, Rubric 42: Writing to Inform

**Reading Check**  
Summarize  
Of what does  
Geographic  
Information System  
(GIS) consist?

questions to the system. For example, a city planner might be looking for the best site near a city to build an airport. To find out, a geographer asks GIS, "What geographic characteristics are important for a good airport site?" GIS pulls together many layers of information, including different types of maps, to answer the question.

In less complex cases, the best tools a geographer can use are a notebook and digital voice recorder to take notes while talking to people. Armed with the proper tools, geographers learn about the world's people and places.

**Summary and Preview** You have learned that geographers use maps, globes, and other tools to study the world. In the next lesson, you will learn map skills, new geographic terms, and geographic themes and elements.

**Lesson 4 Assessment**

**Review Ideas, Terms, and Places**

1. a. **Compare and Contrast** How are maps and globes similar? How are they different?
- b. **Identify** What are the advantages maps have over globes?
2. a. **Describe** How do geographers use satellite images?
- b. **Recall** What are some uses of GPS?
3. a. **Describe** What is GIS?
- b. **Recall** What is the purpose of GIS for geographers?

**Critical Thinking**

4. **Summarize** Make a chart like the one below that lists some of the geographer's tools.

The Geographer's Tools	

## Teach the Main Idea

Geographers use many other tools, including graphs, charts, databases, and models.

**Identify** Besides maps, globes, and satellites, what are some other tools used by geographers?  
*graphs, charts, databases, models, notebooks, digital voice recorders*

**Describe** How do people use Geographic Information Systems? *by posing questions to the system*

**Explain** How can a digital voice recorder help a geographer? *A geographer can use a recorder to take notes while talking to people.*

**READING CHECK**

**Summarize** Of what does Geographic Information Systems (GIS) consist? *a group of databases*

## Print Assessment

**Review Ideas, Terms, and Places**

1. a. **Compare and Contrast** How are maps and globes similar? How are they different? *Both show what the world looks like; maps are flat and globes are spheres.*
- b. **Identify** What are the advantages maps have over globes? *Maps are flat, easier to work with, and better for showing small areas.*
2. a. **Describe** How do geographers use satellite images? *to see what land in an area looks like from above Earth; to make accurate maps*
- b. **Recall** What are some uses of GPS? *Drivers use GPS to find out how to get from where they are to other locations. Others use GPS to locate people in need of rescue on boats or in the wilderness. Some scientists use GPS to track and study wild animals.*
3. a. **Describe** What is GIS? *GIS is a geography tool that is made up of a group of databases.*
- b. **Recall** What is the purpose of GIS for geographers? *to find answers to their questions*

**Critical Thinking**

4. **Summarize** Make a chart that lists some of the geographer's tools. *maps, globes, satellite images, GPS, graphs, charts, databases, models, GIS, notebooks, digital voice recorders*

## COLLABORATIVE LEARNING

**Create a Mind Map of Geographer's Tools**

1. Explain to students that they will create mind maps in response to the question: *What tools do geographers use to study the world?*
2. Organize the class into groups of four or five students and explain that the central idea of the mind map is the question being discussed. Each group should write this central idea in the center of a blank sheet of paper.

3. From that main idea, students should brainstorm to create branches that each represent a single word and/or image relating to the main topic. Then students should create sub-branches that stem from the main branches to further expand on ideas and concepts.
4. Remind students that it is helpful to use different colors and images to differentiate the branches and subtopics. The sizes of letters used can also demonstrate the relative importance of various concepts.

\*Alternative Assessment Handbook, Rubric 13:  
Graphic Organizers

## ► Online Assessment

1. Why are some maps less accurate than globes?

- They distort some details.
- They leave out some countries.
- They show only physical features.
- They show only where places are located.

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

One reason why some maps are less accurate than globes is that they might not correctly show **the distances between places** ▾.

2. Which type of information is much of what is gathered by satellites and used by geographers?

- altitudes
- images
- latitudes
- longitudes

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Satellites can collect information that we cannot **see** ▾ from the planet's surface.

3. Why is GIS a good tool to use for answering complex questions about geography?

- It was designed by a team of city planners.
- It provides information from every world region.
- It was created by a team of mapmaking experts.
- It provides information from many different sources.

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

GIS is a tool that is made up of a group of **databases** ▾.

4. **Make Generalizations** What advantages do maps have over globes? Explain two advantages.

*Maps make it easier to show the details of small areas, such as the roads in a city. Maps can also include detailed information about places, such as the languages that are spoken.*

5. **Draw Conclusions** Why might it be a good idea to bring a GPS device on a hike in the wilderness?

*One use of GPS is locating people in need of rescue in the wilderness. Hikers who are lost but have a GPS device with them can be found because GPS gives rescuers their exact location.*

6. **Make Inferences** Why do geographers use a variety of tools, such as graphs, charts, databases, and models, to study and compare world regions?

*Geography is a complex subject that includes the study of physical and human systems. Because of this complexity, geographers need a variety of tools to make an accurate and meaningful study of it, and to display their findings.*

## ADDITIONAL INSTRUCTIONAL MATERIALS

*continued from page 21*

### More About . . .

**Modern Mapping** *Internet mapping* can mean many things: using software to create and update maps and graphs; gathering data from the Internet to make maps; and using road maps and other kinds of maps found on the Internet to make decisions in daily life. For example, “real time” maps may show wildfire locations in an area so residents can stay updated. Other real time maps may show the flow of traffic or approaching storms, so that commuters can choose routes.



# Geography Handbook

- Earth's Latitude and Longitude
- Earth's Hemispheres
- Map Projections
- How to Read a Map

Visuals

LESSON 5

## Big Idea

Geographers study the world by understanding maps and geographic features of Earth.

- Popular Projections
- Claudius Ptolemy (c. 85–165 AD)

Extend  
and Enrich

## Assessment

- Key Terms Review
- Reading Check
- Graphic Organizer Activity
- Lesson Assessment

Maps,  
Graphs, and  
Charts

Sources

- Document-Based Investigation: Common Map Types
- Document-Based Investigation: Terms Geographers Use

## ► Online Lesson 5 Enrichment Activities

### Popular Projections

**Video** Students watch a video about different map projections, then research and create an informational poster about another map projection system.



### Claudius Ptolemy, c. 85–165 AD

**Article** Students read about the Greek astronomer and geographer Ptolemy and his contributions to geography. Then they write a letter to Ptolemy explaining a modern geographic tool and how it is used today.

## Teach the Big Idea

- 1. Direct Teach** Introduce the Big Idea: *Geographers study the world by understanding maps and geographic features of Earth.* Have students review what they learned about maps and globes in the previous lesson. Ask if they can name some of the features found on maps. Tell students they will be learning about these features in this lesson.
- 2. Practice/Assess/Inquire** Organize students into groups and ask them to create simple maps of the neighborhood. Give students about ten minutes to complete this task, then collect the maps and display them for all students to examine.
- 3. Explore (Collaborative Exploration)** As a class, discuss the differences in the maps the groups created. Did any groups include features such as a title, compass rose, or legend? Ask how the inclusion of these features might make the maps more usable.
- 4. Whole Group Close/Reflect** Have students return to their maps and add any features they think would improve their maps.

\*Alternative Assessment Handbook, Rubric 20:  
Map Creation

### ► ONLINE DOCUMENT-BASED INVESTIGATION

#### A Geographer's World

Common Map Types and Terms Geographers Use are the last two of six document-based investigations that students will analyze in A Geographer's World. Common Map Types gives examples physical, political, and climate maps. Terms Geographers Use illustrates many of the terms that describe landforms and water features.

# Geography Handbook

## The Big Idea

Geographers study the world by understanding maps and geographic features of Earth.

## Main Ideas

- When creating maps, cartographers use a pattern of latitude and longitude lines that circle Earth.
- Cartographers have created map projections to show the round surface of Earth on a flat piece of paper.
- Cartographers provide features to help users read maps.
- There are different kinds of maps for different uses.
- There are many kinds of landforms and other features on Earth.

## Key Terms and Places

grid  
latitude  
parallels  
equator  
degrees  
minutes  
longitude  
meridians  
prime meridian  
hemispheres  
continents  
map projections

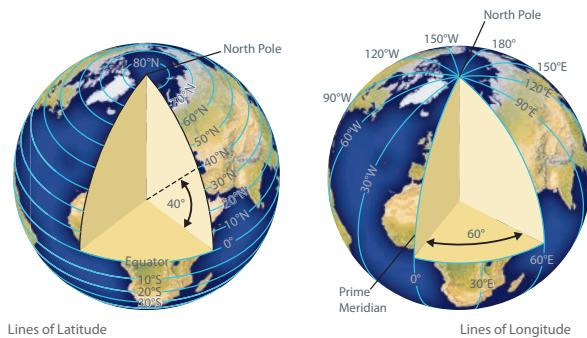
## Latitude and Longitude

As you learned in Lesson 4, a globe is a spherical model of Earth. It is useful for showing the entire Earth or studying large areas of Earth's surface.

To study the world, geographers use a pattern of imaginary lines that circle the globe in east-west and north-south directions. It is called a **grid**. The intersection of these imaginary lines helps us find places on Earth.

The east-west lines in the grid are lines of **latitude**. These lines are called **parallels** because they are always the same distance apart. Lines of latitude measure distance north and south of the **equator**. The equator is an imaginary line that circles the globe halfway between the North and South Poles. It divides the globe into north and south halves. Parallels measure distance from the equator in **degrees**. The symbol for degrees is °. Degrees are further divided into **minutes**. The symbol for minutes is ′. There are 60 minutes in a degree. Parallels north of the equator are labeled with an N. Those south of the equator are labeled with an S.

The north-south imaginary lines are lines of **longitude**. Lines of longitude are called **meridians**. These imaginary lines pass through the poles. They measure distance east and west of the **prime meridian**. The prime meridian is an imaginary line that divides the globe into east and west halves. It runs through Greenwich, England, and represents 0° longitude.



### ► ONLINE GRAPHIC ORGANIZER

#### Geography Handbook

As students read the lesson, have them use the graphic organizer to take notes. Students can review their graphic organizer notes at the end of the lesson to answer the following question:

**Analyze Effects** Why are maps so important to the study of geography?  
*Maps provide a wealth of information about physical, political, or thematic features of a place or region by using titles, keys, compass roses, scales, locator maps, and other color-coded information like elevation or borders between countries.*

### ► ONLINE LESSON FLIP CARDS

#### Review Key Terms and Places

Students can use the flip cards in the Lesson Review at any time to review the lessons key terms and places: **grid**, **latitude**, **parallels**, **equator**, **degrees**, **minutes**, **longitude**, **meridians**, **prime meridian**, **hemispheres**, **continents**, **map projections**.

Lines of latitude range from  $0^{\circ}$ , for locations on the equator, to  $90^{\circ}\text{N}$  or  $90^{\circ}\text{S}$ , for locations at the poles. Lines of longitude range from  $0^{\circ}$  on the prime meridian to  $180^{\circ}$  on a meridian in the mid-Pacific Ocean. Meridians west of the prime meridian to  $180^{\circ}$  are labeled with a *W*. Those east of the prime meridian to  $180^{\circ}$  are labeled with an *E*. Using latitude and longitude, geographers can identify the exact location of any place on Earth.

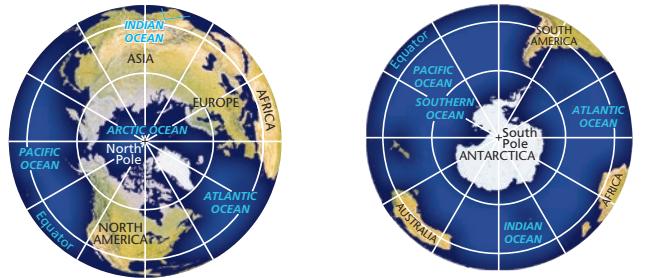
The equator divides the globe into two halves, called **hemispheres**. The half north of the equator is the Northern Hemisphere. The southern half is the Southern Hemisphere. The prime meridian and the  $180^{\circ}$  meridian divide the world into the Eastern and Western Hemispheres.

Earth's land surface is divided into seven large landmasses that are called **continents**. Landmasses smaller than continents and completely surrounded by water are called islands.

Geographers organize Earth's water surface into major regions, too. The largest is the world ocean. Geographers divide the world ocean into the Pacific Ocean, the Atlantic Ocean, the Indian Ocean, the Arctic Ocean, and the Southern Ocean.

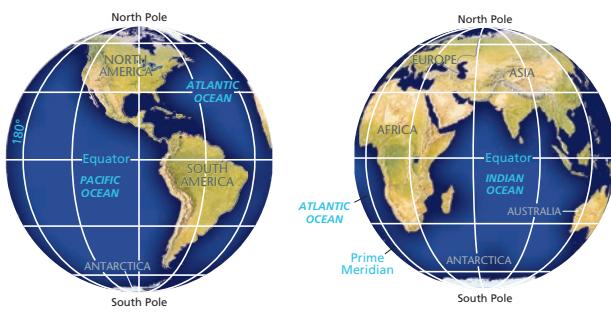
#### Reading Check

Summarize  
How do geographers use a grid of imaginary lines to study the world?



Northern Hemisphere

Southern Hemisphere



Western Hemisphere

Eastern Hemisphere

A Geographer's World 25

#### ENGLISH LANGUAGE LEARNERS

##### Label a Map

- To help students practice using the new vocabulary, organize the students into small groups and ask each group to write the following key terms on word strips: grid, lines of latitude (parallels), equator, longitude (meridians), prime meridian, Northern Hemisphere, Southern Hemisphere, Eastern Hemisphere, Western Hemisphere, and continents.
- Provide each group with a world map. Ask students to work together to label the map by attaching the word strips to the appropriate location on the map.

- As students attach each word strip to the map, ask them to repeat the word, describe what it is, and explain its purpose and how it is used to read a map.

\*Alternative Assessment Handbook, Rubric 14: Group Activity

## Teach the Main Idea

When creating maps, cartographers use a pattern of latitude and longitude lines that circle the Earth.

**Compare** What is the difference between lines of latitude and lines of longitude? *Lines of latitude are east-west lines; lines of longitude are north-south lines.*

**Recall** How many degrees are in a minute? 60

**Infer** What is another name for the Greenwich meridian? *prime meridian*

**Identify** What is the name for the line of latitude at  $0^{\circ}$ ? *the equator*

#### ONLINE INTERACTIVE VISUALS

##### Animation: Earth's Latitude and Longitude

Have students explore the animation of the latitude and longitude lines that circle Earth and then answer the associated question.

**Analyze Animations** What is the difference between lines of latitude and lines of longitude? *Lines of latitude or parallels measure the Earth north and south of the equator. Lines of longitude or meridians measure the Earth east and west of the prime meridian.*

#### ONLINE INTERACTIVE VISUALS

##### Animation: Earth's Hemispheres

Have the students explore the animation that shows the Earth rotating to illustrate the different hemispheres and then answer the associated question.

**Analyze Animations** What imaginary lines do geographers use to divide Earth's hemispheres? *The Northern and Southern Hemispheres are divided by the equator. The Eastern and Western Hemispheres are divided by the prime meridian and the  $180^{\circ}$  meridian.*

#### READING CHECK

**Summarize** How do geographers use a grid of imaginary lines to study the world? *The grid lines circle the globe in east-west and north-south directions. The intersection of these lines locates places on Earth.*

## Teach the Main Idea

Cartographers have created map projections to show the round surface of Earth on a flat piece of paper.

**Recall** What are the three kinds of map projections?  
*cylindrical, conic, flat-plane*

**Explain** What are some advantages and disadvantages of the Mercator projection?  
*Advantages—it is useful for navigation because it shows true direction and shape; disadvantages—it distorts the size of land areas near the poles.*

**Analyze** For what are conic projections most useful?  
*to show areas that have long east-west dimensions*

More About . . .

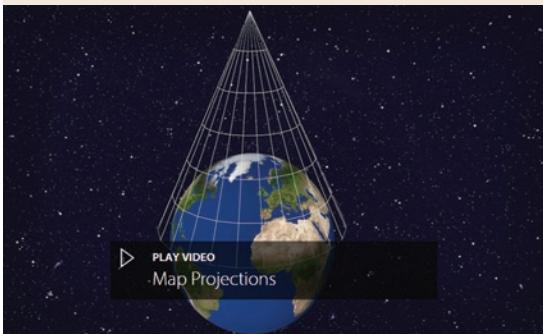
**Azimuthal Map Projection** The flat-plane projection is also called *azimuthal map projection*. Azimuth is an angle used to define the apparent position of an object in the sky, relative to a central observation point. The observer is usually (but not necessarily) located on the earth's surface. Using an azimuthal map, you can find direction from any point on Earth using the central point as a reference.

### ► ONLINE INTERACTIVE VISUALS

#### Animation: Map Projections

Have students explore the animation of cylindrical, conic, and flat-plane projections and then answer the associated question.

**Analyze Animations** Which map projection distorts the land size near the poles? Why?  
*a cylindrical projection; because it pulls the lines of longitude, or meridians, apart when it is flattened out*

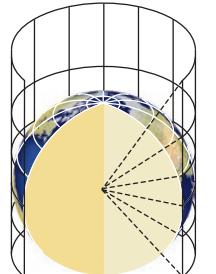


## Map Projections

A map is a flat diagram of all or part of Earth's surface. Mapmakers have created different ways of showing our round planet on flat maps. These different ways are called **map projections**. Because Earth is round, there is no way to show it accurately on a flat map. All flat maps are distorted in some way. Mapmakers must choose the type of map projection that is best for their purposes. Many map projections are one of three kinds: cylindrical, conic, or flat-plane.

**Cylindrical Projections** These projections are based on a cylinder wrapped around the globe. See the “Paper cylinder” illustration below. The cylinder touches the globe only at the equator. The meridians are pulled apart and are parallel to each other instead of meeting at the poles. This causes landmasses near the poles to appear larger than they really are.

A Mercator projection is one type of cylindrical projection. The Mercator projection is useful for navigators because it shows true direction and shape. However, it distorts the size of land areas near the poles.



Paper cylinder



Mercator projection

26 Module 1

## ADVANCED/GIFTED

#### Chart of Map Projections

- Ask students conduct research to create a chart of some of the significant or common map projections. Have them use the sample chart below to create their own charts. One entry has been included in the chart for illustration.
- Students should research information about the following map projections: Cassini, Mercator, Gall stereographic, Lambert conformal, Albers, Gnomonic, and Stereographic.

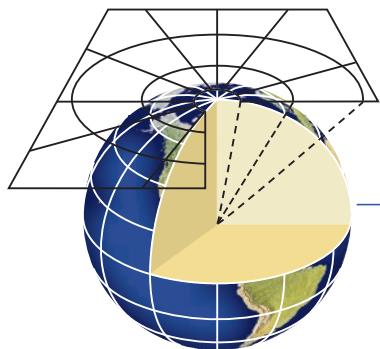
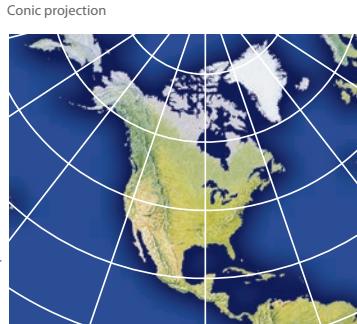
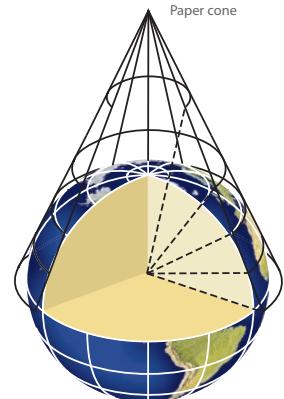
Projection	Type	Creator	Year Created	Notes/Description
Miller	Cylindrical	Osborn Maitland Miller	1942	Intended to resemble the Mercator while also displaying the poles.

\*Alternative Assessment Handbook, Rubrics 7: Charts; and 30: Research

**Conic Projections** These projections are based on a cone placed over the globe. See the “Paper cone” illustration below. A conic projection is most accurate along the lines of latitude where it touches the globe. It retains almost true shape and size. Conic projections are most useful for showing areas that have long east–west dimensions, such as the United States.

**Reading Check**  
**Identify Problems**  
Why is it impossible to accurately show large parts of the world on flat maps?

**Flat-plane Projections** These projections are based on a plane touching the globe at one point, such as at the North Pole or South Pole. See the “Flat plane” illustration below. A flat-plane projection can show true direction to airplane pilots and ship navigators. It also shows true area. However, it distorts the true shapes of landmasses.



### READING CHECK

**Identify Problems** Why is it impossible to accurately show large parts of the world on flat maps? *Because the Earth is round, flat maps are distorted in some way.*

### COLLABORATIVE LEARNING

#### Journaling About Map Projections

1. Organize the class into pairs of students and have each student create a large T on a piece of notebook paper. On one side, each student will write important factual information about map projections.

On the other side, each student will write what he or she thinks about that information.

2. When the journal is complete, each student should share it with his or her partner. Pairs will then work together to create a single journal with information that the pair believes is most important or intriguing.

\*Alternative Assessment Handbook, Rubric 15:  
Journals

## Teach the Main Idea

Cartographers provide features to help users read maps.

**Recall** What are the five elements of a map? *title, compass rose, scale, legend, locator map*

**Explain** What does a map scale show? *the relationship between actual distance and distance shown on a map*

**Identify** Which map feature will tell a user what is represented by the colors on a map? *the legend*

**Explain** Why is it important for a map to have a title? *A title instantly gives the viewer a succinct description of the subject matter of the map.*

**Draw Conclusions** Of the five map features described in the text, which do you consider the least essential? Why? *Possible answer: the locator map is least essential; it is not shown on all maps.*

### More About . . .

**Misconception Alert** Students may not know that north is not always shown at the top of a map. Before the advent of printing and the widespread use of the compass, early maps typically placed east at the top—possibly because the sun rises in the east. Some of the earliest Egyptian maps depict south at the top, perhaps emulating the northward flow of the Nile River. And some early maps of North America were shown with a west-east orientation that mimicked the direction they chiefly traveled and explored.

**Connect to Language Arts: Compass Rose** The compass rose gets its name from the resemblance of the figure's compass points to the petals of the well-known flower. Today, almost all maps have a compass rose. Before compass roses came into common use in the fourteenth century, hard-to-follow directional lines were drawn from central points on the map. The compass rose design was rendered so that users could more easily follow the directional lines.

### ONLINE INTERACTIVE VISUALS

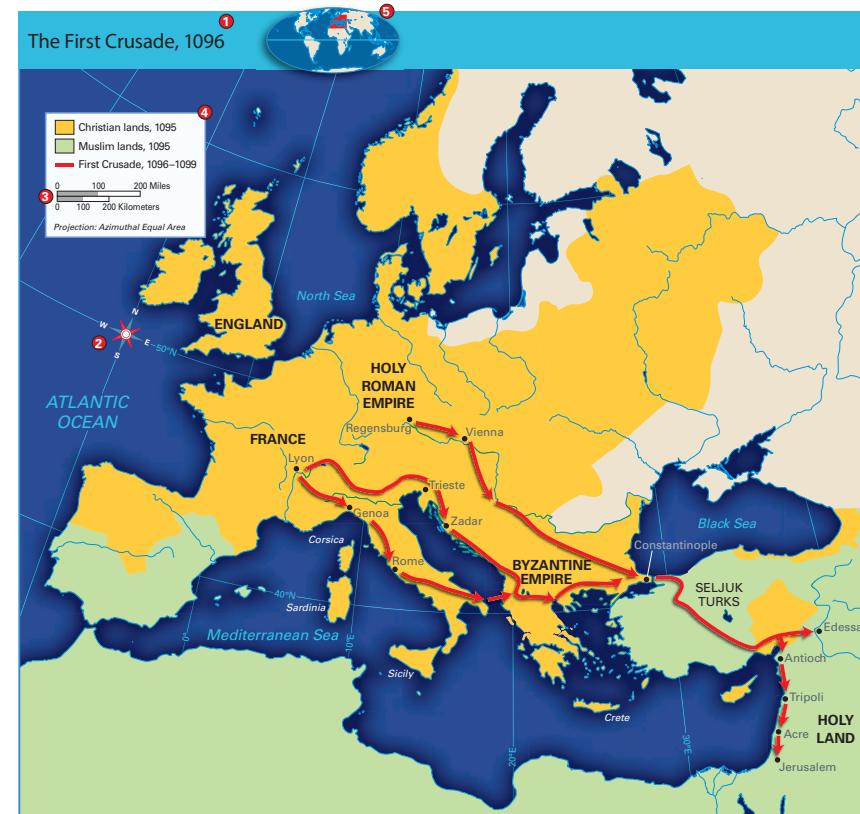
#### Animation: How to Read a Map

Have students explore the animation of how to read a map using common map elements.

## Map Features

Maps are like messages sent out in code. To help us translate the code, mapmakers provide certain features. These features help us understand the message they are presenting about a particular part of the world. Of these features, almost all maps have a title, a compass rose, a scale, and a legend. The map below has these four features plus a fifth—a locator map.

**1 Title** A map's title shows what the subject of the map is. The map title is usually the first thing you should look at when studying a map, because it tells you what the map is trying to show.



28 Module 1

### SPECIAL NEEDS STUDENTS

#### Create a Directional Mnemonic

1. Explain to students that the N on a compass rose stands for "north." Write this on the board, then ask student volunteers to name the other directions for S, E, and W.
2. To help students remember the clockwise order of the directions on a compass rose, help them make up a mnemonic such as **Naughty Elephants Spray Water**.

3. To reinforce the learning, ask students to draw a picture that incorporates the mnemonic they create.

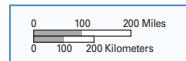
\*Alternative Assessment Handbook, Rubric 3: Artwork

**2 Compass Rose** A directional indicator shows which way north, south, east, and west lie on the map. Some mapmakers use a “north arrow,” which points toward the North Pole. Remember, “north” is not always at the top of a map. The way a map is drawn and the location of directions on that map depend on the perspective of the mapmaker. Most maps indicate direction with a compass rose. A compass rose has arrows that point to all four principal directions, also called cardinal points. The principal directions are north (N), east (E), south (S), and west (W). Some compass roses also show the intermediate directions. These are northeast (NE), southeast (SE), southwest (SW), and northwest (NW).

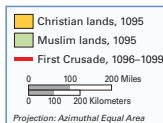


**3 Scale** Mapmakers use scales to represent the distances between points on a map. Scales may appear on maps in several different forms. Some maps provide a bar scale. Scales give distances in miles and kilometers.

To find the distance between two points on the map, place a piece of paper so that the edge connects the two points. Mark the location of each point on the paper with a line or dot. Then compare the distance between the two dots with the map's bar scale. The number on the top of the scale gives the distance in miles. The number on the bottom gives the distance in kilometers. Because the distances are given in large intervals, you may have to approximate the actual distance on the scale.



**4 Legend** The legend, or key, explains what the symbols on the map represent. Point symbols are used to specify the location of things, such as cities, that do not take up much space on the map. Some legends show colors that represent certain features like empires or other regions. Other maps might have legends with symbols or colors that represent features such as roads. Legends can also show economic resources, land use, population density, and climate. Some legends include the map scale as well.



**5 Locator Map** A locator map shows where in the world the area on the map is located. In this example, the area shown on the main map is shown in red on the locator map. The locator map also shows surrounding areas so the reader can see how the information on the map relates to neighboring lands.



**Reading Check**  
Summarize What four features do most maps have?

**READING CHECK**

**Summarize** What four features do most maps have? *title, compass rose, scale, legend*

## STRUGGLING READERS

### Ask Questions About Map Features

1. Guide students to ask each other simple questions about the various map features discussed in this section. For example:  
What is another name for a legend? (*a key*)  
What are the four principal directions?  
(*north, south, east, west*).

2. Support small groups as they discuss the map features. Guide them to take turns naming a fact about a map feature. Then have others ask relevant questions and build on each other's ideas. To check understanding, have them paraphrase main points made by other students.

\*Alternative Assessment Handbook, Rubrics  
11: Discussions; and 21: Map Reading

## Teach the Main Idea

There are different kinds of maps for different uses.

**Name** What kinds of information will you find on a political map? *country borders and capital and other main cities*

**Contrast** How are the colors on a political map used differently than the colors on a physical map? *Colors on a political map represent individual countries; colors on a physical map represent different elevations of land.*

**Identify** What type of map shows a region's important natural resources and the ways land is used by people? *thematic map*

**Explain** Why is a political map of France likely to identify Paris with a star symbol? *Paris is the capital city of France.*

More About . . .

### Connect to Mathematics: The Four-Color Theorem

**Theorem** The four-color theorem states that no more than four colors are needed to color the regions of a political map so that no two adjacent countries or regions have the same color. The idea was first proposed in 1852 by Augustus De Morgan, a mathematics professor in London. However, De Morgan was not proven correct until 1976, when Kenneth Appel and Wolfgang Haken at the University of Illinois used a computer to verify the theory.

**Cartography as a Career** People who collect, measure, and interpret geographic information to create and update maps are called cartographers. Most cartographers have a bachelor's degree in geography, geomantics (a discipline that combines the science, engineering, math, and art of collecting and managing geographically referenced information), surveying or—unsurprisingly—cartography. The job outlook for cartographers is excellent; employment is expected to grow almost 30 percent between now and 2024, much faster than for most other occupations. In 2016, the average annual pay for cartographers was about \$63,000.

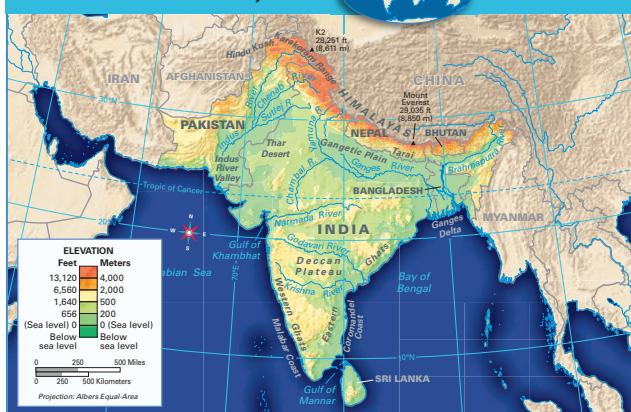
## Different Kinds of Maps

As you study the world's regions and countries, you will use a variety of maps. Political maps and physical maps are two of the most common types of maps you will study. In addition, you will use thematic maps. These maps might show climate, population, resources, ancient empires, or other topics. By working with these maps, you will see what the physical geography of places is like, where people live, and how the world has changed over time.

**Political Maps** Political maps show the major political features of a region. These features include country borders, capital cities, and other places. Political maps use different colors to represent countries, and capital cities are often shown with a special star symbol.



### The Indian Subcontinent: Physical



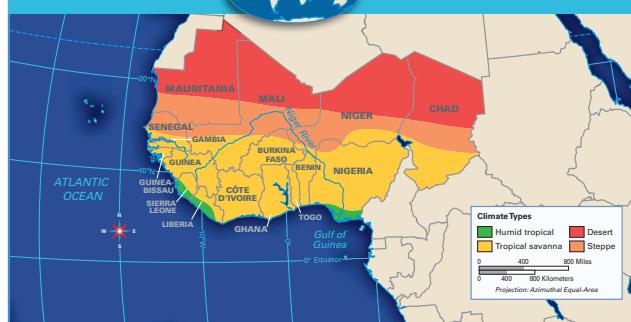
**Physical Maps** Physical maps show the major physical features of a region. See the map above. These features may include mountain ranges, rivers, oceans, islands, deserts, and plains. Often, these maps use different colors to represent different elevations of land. The reader can easily see which areas are high elevations, such as mountains, and which areas are lower.

**Thematic Maps** Thematic maps focus on one special topic, such as climate, resources, or population. See the map below. These maps present information on the topic that is particularly important in the region. Depending on the type of thematic map, the information may be shown with different colors, arrows, dots, or other symbols.

#### Reading Check

Summarize What are two of the most common kinds of maps used in geography?

### West Africa: Climate



### ONLINE DOCUMENT-BASED INVESTIGATION

#### Common Map Types

This map shows three types of maps that geographers use. Have students click or tap *political*, *physical*, or *climate* in the key to explore the three different maps of the United States.

**Analyze Sources** Use the interactive map tools to circle where you live. Describe where you live based on the three maps. Include the climate and physical features near your city or town.  
*Answers will vary.*



#### READING CHECK

**Summarize** What are two of the most common kinds of maps used in geography? *political and physical maps*

## Teach the Main Idea

There are many kinds of landforms and other features on Earth.

**Define** What is a canyon? *a deep, narrow valley with steep walls*

**Identify** What does a reef consist of? *coral, rock, or sand*

**Compare** What do inlets, lagoons, and gulfs have in common? *They are all areas of water.*

**Recall** How high does a landform need to be to be labeled a mountain? *at least 2,000 feet (610 m)*

**Rank** Rank the following in order of size: gulf, sea, bay, ocean. *ocean, sea, gulf, bay*

### ONLINE DOCUMENT-BASED INVESTIGATION

#### Terms Geographers Use

This image with hotspots gives visual examples of different terms geographers use to describe landforms and water features. Have students explore the image using the interactive hotspots to identify 46 different landforms and water features.

**Analyze Sources** Why do you think geographers have so many different names for Earth's physical landforms and water features? *Possible answer: As our geographical knowledge has grown, these terms make it easier to describe and categorize more of Earth's distinct physical features.*

#### Landforms and Water Features

Explore some of Earth's features in this illustration.



#### READING CHECK

**Summarize** What is a landform? *a naturally formed feature on Earth's surface*

## Earth's Surface Features

A landform is a naturally formed feature on Earth's surface. There are many kinds of landforms and water features on Earth. Many of these features are shown in this illustration.



Feature Descriptions		
1	<b>ocean</b>	large body of water
2	<b>cape</b>	point of land that extends into water
3	<b>coastal plain</b>	area of flat land along a sea or ocean
4	<b>coast</b>	area of land near the ocean
5	<b>glacier</b>	large area of slow-moving ice
6	<b>lake</b>	inland body of water
7	<b>plain</b>	nearly flat area
8	<b>inlet</b>	area of water extending into the land from a larger body of water
9	<b>floodplain</b>	flat land next to a river formed by silt deposited by floods
10	<b>timberline</b>	line on a mountain above which it is too cold for trees to grow
11	<b>river</b>	natural flow of water that runs through the land
12	<b>source of river</b>	place where a river begins
13	<b>foothill</b>	hilly area at the base of a mountain
14	<b>riverbank</b>	land along a river
15	<b>mouth of river</b>	place where a river empties into another body of water
16	<b>hill</b>	rounded, elevated area of land smaller than a mountain
17	<b>mountain</b>	area of rugged land that generally rises higher than 2,000 feet
18	<b>island</b>	area of land surrounded entirely by water
19	<b>basin</b>	bowl-shaped area of land surrounded by higher land
20	<b>mountain range</b>	row of mountains
21	<b>plateau</b>	large, flat, elevated area of land
22	<b>bluff</b>	high, steep face of rock or earth
23	<b>isthmus</b>	narrow piece of land connecting two larger land areas
24	<b>valley</b>	area of low land between hills or mountains
25	<b>marsh</b>	lowland with moist soil and tall grasses
26	<b>lagoon</b>	body of shallow water
27	<b>strait</b>	narrow body of water connecting two larger bodies of water
28	<b>canyon</b>	deep, narrow valley with steep walls
29	<b>peninsula</b>	area of land that sticks out into a lake or ocean
30	<b>volcano</b>	opening in Earth's crust where lava, ash, and gases erupt
31	<b>waterfall</b>	steep drop from a high place to a lower place in a stream or river
32	<b>delta</b>	area where a river deposits soil into the ocean
33	<b>cliff</b>	high, steep face of rock or earth
34	<b>reef</b>	ocean ridge made up of coral, rock, or sand
35	<b>gulf</b>	large part of the ocean that extends into land
36	<b>peak</b>	top of a mountain
37	<b>swamp</b>	area of low, wet land with trees
38	<b>bay</b>	part of a large body of water that is smaller than a gulf
39	<b>dune</b>	hill of sand shaped by wind
40	<b>tributary</b>	stream or river that flows into a larger stream or river
41	<b>mountain pass</b>	gap between mountains
42	<b>sea</b>	body of salt water smaller than an ocean
43	<b>desert</b>	extremely dry area with little water and few plants
44	<b>oasis</b>	area in the desert with a water source
45	<b>mesa</b>	flat-topped mountain with steep sides
46	<b>savanna</b>	area of grassland and scattered trees

## LINK TO LANGUAGE ARTS

### Building Geographic Vocabulary

- On separate slips of paper, write the names of the different landforms and water features shown in the table and place them in a small container.
- Ask each student to draw a slip from the container and find the definition of the term he or she selected.

- Then have each student draw a sketch of the term he or she selected. Pair students and have partners use the drawings to try to identify each other's term.

\*Alternative Assessment Handbook, Rubrics 3: Artwork; and 12: Drawing Conclusions

# Print Assessment

## Review Ideas, Terms, and Places

1. a. **Define** What is the equator? *imaginary line that circles the globe halfway between the North and South Poles*  
b. **Identify** How is the prime meridian used? *It divides the globe into east and west halves. It is used to measure longitude east to west.*
2. a. **Define** What is a map projection? *a way of showing round Earth on a flat map*  
b. **Explain** Why are cylindrical and flat-plane projections useful for airplane pilots and ship navigators? *Both projections show true direction.*
3. a. **Describe** Describe a compass rose and the information it contains. *A compass rose is a directional indicator on a map. It is made up of arrows showing all four principal directions (north, south, east, west) and all four intermediate directions (northeast, northwest, southeast, southwest).*  
b. **Identify and Explain** What is a bar scale? How is it used? *A bar scale represents the distances between two points on a map. Place a piece of paper so that the edge connects the two points. Mark the location of each point on the paper with a line or dot. Then compare the distance between the two dots with the map's bar scale. The number on the top of the scale gives the distance in miles. The number on the bottom gives the distance in kilometers.*
4. a. **Analyze** Which kind of map would you use if you wanted to know which part of the mapped area was highest? Why? *physical; many physical maps show elevations of land areas*  
b. **Identify** What characteristic makes a map a thematic map? *The map focuses on one special topic that is important to the region it maps.*
5. a. **Define** What is a delta? *an area where a river deposits soil into the ocean*  
b. **Define** What is a glacier? *a large area of slow-moving ice*

## Critical Thinking

6. **Compare and Contrast** Create a chart that compares and contrasts kinds of map projections.  
*Cylindrical map projections—Based on: cylinder wrapped around the globe, Accurately shows: direction and shape, Distorts: size of land near Poles;*  
*Conic map projections—Based on: cone placed over the globe, Accurately shows: shape and size;*  
*Flat-plane projections—Based on: plane touching the globe at one point, Accurately shows: direction, Distorts: shapes of landmasses*

**Summary** As you study geography, one of the main tools you will use is the map—the primary tool of geographers. In this lesson, you learned about some of the basic features of maps. You discovered how maps are made, how to read them, and how they can show the round surface of Earth on a flat piece of paper. You learned about latitude and longitude and map projections. You read about map features, such as titles, compass roses, scales, legends, and locator maps, and different kinds of maps designed for different uses. You've discovered names and descriptions of some of Earth's features. Now use your new knowledge to explore the world from a geographer's perspective.

## Lesson 5 Assessment

### Review Ideas, Terms, and Places

1. a. **Define** What is the equator?  
b. **Identify** How is the prime meridian used?
2. a. **Define** What is a map projection?  
b. **Explain** Why are cylindrical and flat-plane projections useful for airplane pilots and ship navigators?
3. a. **Describe** Describe a compass rose and the information it contains.  
b. **Identify and Explain** What is a bar scale? How is it used?
4. a. **Analyze** Which kind of map would you use if you wanted to know which part of the mapped area was highest? Why?  
b. **Identify** What characteristic makes a map a thematic map?

5. a. **Define** What is a delta?  
b. **Define** What is a glacier?

### Critical Thinking

6. **Compare and Contrast** Create a chart like the one shown that compares and contrasts kinds of map projections.

Map Projections			
	Cylindrical	Conic	Flat-plane
Based on			
Accurately shows			
Distorts			

## ► Online Assessment

1. Why are latitude and longitude useful to geographers?
  - They can be used to organize the entire water surface on Earth.
  - They can be used to divide all of the large landmasses on Earth.
  - They can be used to identify the exact location of any place on Earth.
  - They can be used to identify the approximate location of any place on Earth.

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Using *latitude and longitude*  , geographers can identify the exact location of any place on Earth.

2. Which of the following is a disadvantage of cylindrical projections?
  - They are not useful for determining true direction.
  - They are not useful for determining the location of places.
  - They do not accurately show the size of landmasses near the poles.
  - They do not accurately show the shape of landmasses near the equator.

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Cylindrical projections can misrepresent the size of landmasses because the cylinder used to make them touches the globe only at the *equator*  .

3. Which map feature explains what the symbols on the map represent?
  - the title
  - the scale
  - the legend
  - the compass rose

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

Some legends show *colors*   that represent certain features like empires or other regions.

4. How are thematic maps different from political maps and physical maps?
  - They show major cities rather than just capital cities.
  - They focus on one region rather than on one country.
  - They focus on one special topic rather than on specific features.
  - They show intermediate directions rather than just principal directions.

**Alternate Question** Which of the following might be the focus of a thematic map? Select the **three** correct answers.

- climate
- countries
- islands
- population
- resources
- rivers

5. Which landforms are found in deserts?

- marshes
- deltas
- peninsulas
- oases

**Alternate Question** Select the answer choice from the drop-down list to complete the sentence correctly.

An oasis is an area in the desert with a *water source*  .

6. **Compare and Contrast** How are lines of latitude and longitude similar and different? Describe one similarity and one difference.

*Lines of latitude and longitude are similar because they both measure distances from a fixed point. They are different because lines of latitude are always the same distance apart, but lines of longitude are not.*

7. **Draw Conclusions** What type of map projection would you want to use if you were sailing across a large lake to a dock on the other side that you could not see? Explain your choice.

*I would want to use a Mercator projection. That is because this type of projection shows true direction and would be most helpful in finding a place that could not be seen from a starting point.*

8. **Make Inferences** When is it a good idea to include a locator map with a map? Describe one possible use.

*Locator maps show where in the world the area on a map is located, so it is a good idea to include one when the reader needs to see how the information on the map relates to the surrounding area. One possible use for locator maps would be on a map of a city, so that readers can see where the city is located in a particular region.*

9. **Make Generalizations** Why do physical maps often use different colors?

*Physical maps often use different colors to represent different elevations of land. This helps readers see which areas are high elevations and which areas are lower elevations.*

10. **Make Generalizations** Which surface features might you find in a mountain range? Name and describe two.

*You might find a plateau, which is a large, flat, elevated area of land. You might also find a source of water, which is a place where a river begins.*

## ADDITIONAL INSTRUCTIONAL MATERIALS

*continued from page 25*

### More About . . .

**Connect to Geography: The Southern Ocean** The Southern Ocean is the world's "newest" ocean. The U.S. Board on Geographic Names recognizes it as the body of water extending from the coast of Antarctica to the line of latitude at 60° South. The International Hydrographic Organization proposed the Southern Ocean's boundaries in 2000, though not all countries currently agree on them. Southern portions of the Pacific, Atlantic, and Indian Oceans were reclassified to "create" the Southern Ocean. It is sometimes referred to as the Antarctic Ocean.

# Social Studies Skills

## Analyze Satellite Images

### Define the Skill

In addition to maps and globes, satellite images are among the geographer's most valuable tools. Geographers use two basic types of these images. The first type is called true color. These images are like photographs taken from high above Earth's surface. The colors in these images are similar to what you would see from the ground. Vegetation, for example, appears green.

The other type of satellite image is called an infrared image. Infrared images are taken using a special type of light. These images are based on heat patterns, and so the colors on them are not what we might expect. Bodies of water appear black, for example, since they give off little heat.

### Learn the Skill

Use the satellite images on this page to answer the following questions.

1. On which image is vegetation red?
2. Which image do you think probably looks more like Italy from the ground?

### Practice the Skill

Search the Internet to find a satellite image of your state or region. Determine whether the image is true color or infrared. Then write three statements that describe what you see on the image.



True-color satellite image of Italy



Infrared satellite image of Italy

# Social Studies Skills

## Analyze Satellite Images

Refer the students to print maps, atlases, or globes and have them compare those map images to satellite images of the same areas. Ask the students how the different kinds of geographic tools are alike and how they are different. Students may use a chart or graphic organizer to record their answers. Then have students compare their results with a classmate, and then discuss the results as a class.

### Answers

#### Learn the Skill

1. On which image is vegetation red? *infrared satellite image*
2. Which image do you think probably looks more like Italy from the ground? *true color satellite image*

#### Practice the Skill

Search the Internet to find a satellite image of your state or region. Determine whether the image is true color or infrared. Then write three statements that describe what you see on the image. *Students' statements should accurately describe the satellite image they chose.*

# Module 1 Assessment

## Print Assessment

### Review Vocabulary, Terms, and Places

Match the words in the columns with the correct definitions listed below.

- |                       |                |   |
|-----------------------|----------------|---|
| 1. geography          | 6. region      | a |
| 2. physical geography | 7. cartography | h |
| 3. human geography    | 8. map         | b |
| 4. element            | 9. landscape   | i |
| 5. meteorology        | 10. globe      | d |
- a. a part of the world that has one or more common features that make it different from surrounding areas  
b. a flat drawing of part of Earth's surface  
c. a part  
d. a spherical model of the planet  
e. the study of the world's physical features  
f. the study of weather and what causes it  
g. the study of the world, its people, and the landscapes they create  
h. the science of making maps  
i. the physical and human features that define an area and make it different from other places  
j. the study of people and communities

### Comprehension and Critical Thinking

#### LESSON 1

11. a. **Explain** In what ways do geographers become scientists when working to answer questions? *They gather data and study it carefully.*  
b. **Recall** What are three levels at which a geographer might study the world? *local, regional, global; largest—global*  
c. **Identify** Which of these levels covers the largest area? *global*

#### LESSON 2

12. a. **Locate** Choose a country to locate on the political map of the world in this book's atlas. Use latitude and longitude to determine the absolute location of the country. *Students' answers will vary, but should show an understanding of how to determine the absolute location of a country.*  
b. **Explain** Why did geographers create the five themes and the six essential elements? *so people can use them to organize and guide their study of geography*  
c. **Predict** How might the five themes and six essential elements help you in your study of geography? *Possible answer: as a study guide, helping to understand all aspects of places and people that are important to know*

### Review Vocabulary, Terms, and Places

Match the words in the columns with the correct definitions listed below.

- |                       |   |
|-----------------------|---|
| 1. geography          | a. a part of the world that has one or more common features that make it different from surrounding areas |
| 2. physical geography | b. a flat drawing of part of Earth's surface  |
| 3. human geography    | c. a part   |
| 4. element            | d. a spherical model of the planet  |
| 5. meteorology        | e. the study of the world's physical features   |
| 6. region             | f. the study of weather and what causes it  |
| 7. cartography        | g. the study of the world, its people, and the landscapes they create                                     |
| 8. map                | h. the science of making maps   |
| 9. landscape          | i. the physical and human features that define an area and make it different from other places            |
| 10. globe             | j. the study of people and communities  |

### Comprehension and Critical Thinking

#### Lesson 1

11. a. **Explain** In what ways do geographers become scientists when working to answer questions?  
b. **Recall** What are three levels at which a geographer might study the world?  
c. **Identify** Which of these levels covers the largest area?
12. a. **Locate** Choose a country to locate on the political map of the world in this book's atlas. Use latitude and longitude to determine the absolute location of the country.  
b. **Explain** Why did geographers create the five themes and the six essential elements?  
c. **Predict** How might the five themes and six essential elements help you in your study of geography?

#### Lesson 3

13. a. **Identify** What are the two main branches of geography? What does each include?  
b. **Summarize** How can physical geography help people adjust to the dangers of the world?  
c. **Elaborate** Why do geographers study both physical and human geographic features of places?

#### Lesson 4

14. a. **Elaborate** How might satellite images and computers help geographers improve their knowledge of the world?  
b. **Define** What is GPS?  
c. **Explain** How might a geographer use a notebook and a digital voice recorder to gather data?

#### Lesson 5

15. a. **Define** What is a hemisphere of a globe?  
b. **Explain** What features are shown in a political map?  
c. **Identify** What is a peninsula?



### ONLINE DOCUMENT-BASED INVESTIGATION

#### A Geographer's World

Have students complete and review all the DBI activities in Part 1.

Use this Presentation Rubric to score students' work in Part 2.

**RUBRIC** Students' verbal and/or visual presentations should

- be delivered loudly and clearly enough to be heard by the audience
- present information logically and concisely so that the audience can follow the line of reasoning
- employ relevant visuals and effectively use presentation technology (as applicable)

- cite at least three sources of relevant text evidence from Part 1 in support of their speech topic
- be organized with a distinct introduction, a main body, and a conclusion that sums up the main points

**Write a Presentation** Review the exhibits in Part 1, then think about what you've learned about the tools geographers use to study the world. Create and deliver a presentation that answers the following question: How could you use geographic tools and ideas to understand your community? Be sure to cite specific evidence from at least three sources in your presentation.

## Module 1 Assessment, continued

### Reading Skills

16. **Use Prior Knowledge** Use the Reading Social Studies activity in this module to help you create a chart. With a partner, create a three-column chart titled A Geographer's World. In the first column, list what you each knew about geography before you read the module. In the second column, list what you each learned about geography. In the third column, list questions that you each still have about geography.

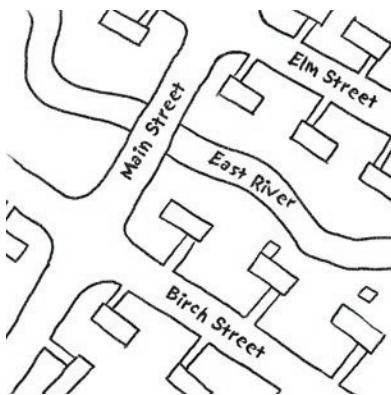
### Social Studies Skills

**Analyze Satellite Images** Use the images from the Social Studies Skills activity in this module to answer the questions below.

17. On which image do forests appear more clearly: the true color or the infrared image?
18. What color do you think represents mountains on the infrared satellite image?
19. Why might geographers use satellite images like these while making maps of Italy?

### Map Activity

20. **Sketch Map** Look for and read environmental print to help you sketch a map of your school. Environmental print can be found all around you in the form of signs, labels, symbols, words, and numbers that provide information. Your map should include environmental print found in and around classrooms and buildings. Use the basic sketch map shown here as an example.



### Focus on Writing

21. **Write a Job Description** Review your notes on the different jobs geographers do. Then write a job description of a geographer that could be included in a career planning guide. You should begin your description by explaining why the job is important. Then identify the job's tasks and responsibilities. Finally, tell what kind of person might do well as a geographer.

A Geographer's World 37

### LESSON 3

- a. **Identify** What are the two main branches of geography? What does each include? *physical—landforms, bodies of water, other physical features; human—world's people and their cultures*
- b. **Summarize** How can physical geography help people adjust to the dangers of the world? *It helps them make predictions and preparations.*
- c. **Elaborate** Why do geographers study both physical and human geographic features of places? *Possible answer: because studying each part helps give a better understanding of Earth and its people*

### LESSON 4

- a. **Elaborate** How might satellite images and computers help geographers improve their knowledge of the world? *Possible answer: They allow geographers to analyze more data at once and to get updates more often to track changes, so information is more accurate.*
- b. **Define** What is GPS? *A technology system that uses 24 satellites to transmit information to Earth. The information includes the exact location of a given object.*
- c. **Explain** How might a geographer use a notebook and a digital voice recorder to gather data? *to take notes while talking to people and getting their personal information about a place*

### LESSON 5

- a. **Define** What is a hemisphere of a globe? *The equator divides a globe into two halves, which are hemispheres.*
- b. **Explain** What features are shown in a political map? *country borders, capital cities, and/or other identifying places*
- c. **Identify** What is a peninsula? *an area of land that sticks out into a lake or ocean*

### Reading Skills

16. **Use Prior Knowledge** Use the Reading Social Studies activity in this module to help you create a chart. With a partner, create a three-column chart titled, A Geographer's World. In the first column, list what you each knew about geography before you read the module. In the second column, list what you each learned about geography. In the third column, list questions that you each still have about geography. *Students' charts should clearly list prior knowledge, information learned in terms of the main ideas in each section, and questions or topics they would like to learn more about.*

## Essential Question ESSAY

### How does the use of geographic tools help us view the world in new ways?

#### RUBRIC

- Students' essays should
- respond to the Essential Question with a specific position
  - illustrate valid reasoning supporting their position
  - cite persuasive evidence supporting their position
  - identify key people, events, and/or turning points that demonstrate understanding of the module content
  - be organized into a distinct introduction, main body, and conclusion

Write an argument answering this question. Your essay should include specific details about how different geographic tools provide information that helps people understand how the world works. Be sure to cite evidence and organize your essay into an introduction, body, and conclusion.

**Alternate Activity** Instead of writing essays, address the Essential Question through activities such as holding debates, creating multimedia presentations, or writing journal entries. See the Alternative Assessment Handbook for a selection of project rubrics.

(continued)

## Print Assessment (continued)

### Social Studies Skills

**Analyze Satellite Images** Use the images from the Social Studies Skills activity in this module to answer the questions below.

17. On which image do forests appear more clearly, the true-color or the infrared image? **true-color**
18. What color do you think represents mountains on the infrared satellite image? **light blue**
19. Why might geographers use satellite images like these while making maps of Italy? **to improve accuracy**

### Map Activity

20. **Sketch Map** Look for and read environmental print to help you sketch a map of your school. Environmental print can be found all around you in the form of labels, symbols, words, or numbers that provide information. Your map should include environmental print such as labels, symbols, words, or numbers in and around classrooms and buildings. Use the basic sketch map shown here as an example. *Students' maps should clearly show where the school is and should include environmental print in and around the school.*

### Focus on Writing

21. **Write a Job Description** Review your notes on the different jobs geographers do. Then write a job description of a geographer that could be included in a career-planning guide. You should begin your description by explaining why the job is important. Then identify the job's tasks and responsibilities. Finally, tell what kind of person might do well as a geographer.

**RUBRIC** Students' job descriptions should

- give reasons why the job is important
- list the job's major tasks and responsibilities
- include characteristics needed to do the job well

## Online Assessment

1. Why is geography sometimes called a social science?  
 because it involves measuring things  
 because it deals with weather patterns  
 because it deals with people and how they live  
 because it involves field work and gathering information
2. Which of the following questions are asked by geographers who study issues at a local level?  
Select the **three** correct answers.  
 What do people eat?  
 What products are exported?  
 How does the city government work?  
 How do people get from place to place?  
 What are the common physical characteristics?  
 What characteristics does a place share with other places?
3. Which of the following is an example of a physical region?  
 the Sahara  
 Scandinavia  
 San Francisco  
 North America
4. Which of the following are studied as a part of physical geography?  
Select the **three** correct answers.  
 artifacts  
 climate  
 plants  
 roads  
 schools  
 soils
5. Which of the following are studied as a part of human geography?  
Select the **three** correct answers.  
 agriculture  
 economics  
 landforms  
 migration  
 water  
 weather
6. Which of the following is studied by hydrologists?  
 how rivers form  
 how plants grow  
 what causes weather  
 what causes droughts
7. Drag the name of the theme of geography into the box next to its description.

why and how people relocate	Movement
a description of where a place is	Location
how people relate to their surroundings	Human-Environment Interaction
dividing the world into smaller segments to make it easier to study	Regions
the features that define an area and make it different from other places	Place

8. Which of the following geography standards are linked to the essential element of Environment and Society?

Select the **three** correct answers.

- how physical systems affect human systems
- the physical and human characteristics of places
- how human actions modify the physical environment
- changes that occur in the meaning, use, distribution, and importance of resources
- how to analyze the spatial organization of people, places, and environments on Earth's surface
- how the forces of cooperation and conflict among people influence the division and control of Earth's surface

9. Which essential element of geography is not covered in the five themes?

- Physical Systems
- The Uses of Geography
- Environment and Society
- The World in Spatial Terms

10. What advantage do globes have over maps?

- They are easier to work with.
- They are less expensive to make.
- They show the world as it really is.
- They show more information about the world.

11. How do scientists use GPS?

- to make maps
- to track animals
- to display images
- to send information

12. Which of the following statements accurately describe GIS?

Select the **three** correct answers.

- It is made up of a group of databases.
- It uses 24 satellites to transmit information.
- It is helpful in answering complex questions.
- It is helpful in getting from one place to another.
- It gives the exact location of a given object on our planet.
- It combines and provides information from many different sources.

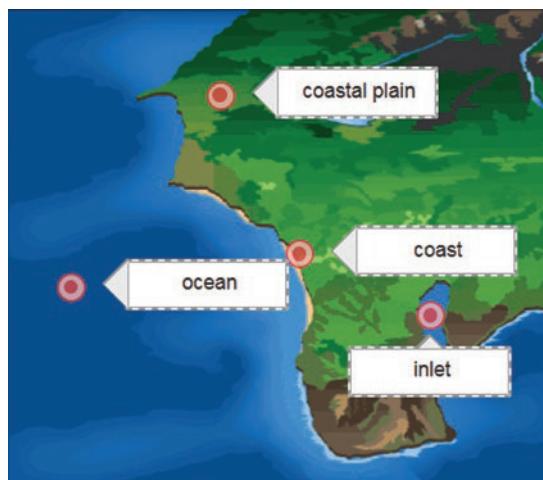
13. What are lines of longitude called?

- degrees
- meridians
- minutes
- parallels

14. Drag the name of the map feature into the box next to its description.

It shows what the subject of the map is.	title
It explains what the symbols on the map represent.	legend
It represents the distances between points on a map.	scale
It shows where in the world the area on the map is located.	locator map
It shows which way north, south, east, and west lie on the map.	compass rose

15. Drag the names of the surface features to their correct locations.



- 1 coast
- 2 ocean
- 3 inlet
- 4 coastal plain