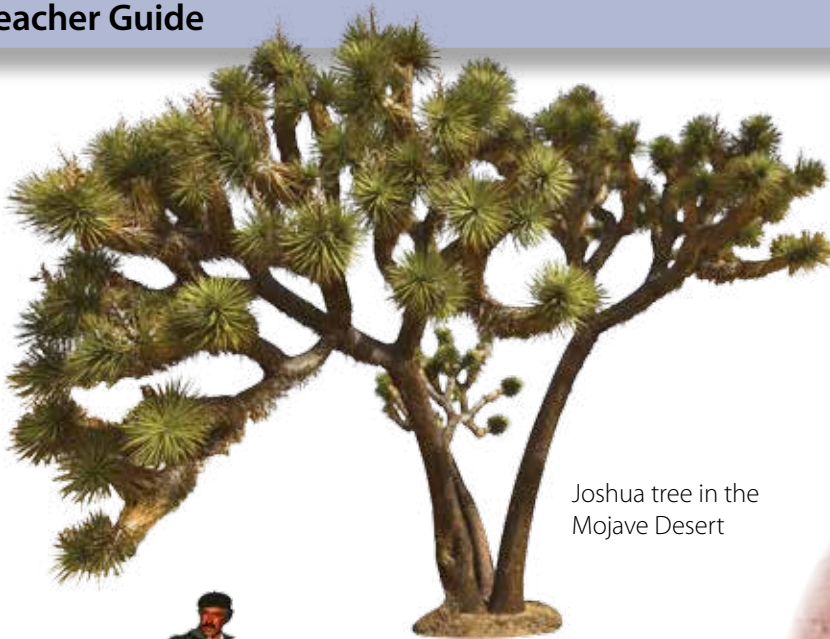




World Deserts

Teacher Guide



Joshua tree in the Mojave Desert

Frog in the Australian Outback



South American shepherd

Camel train across the Sahara Desert



World Deserts

Teacher Guide



Core Knowledge®

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World Deserts

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World Deserts

Teacher Guide

Core Knowledge History and Geography™ 6

Introduction

ABOUT THIS UNIT

The Big Idea

Maps and globes are used to show location and other aspects of geography, including the world's great deserts. Deserts, about 20 percent of Earth's land surface, are found on every continent except Europe.

Although each desert is notable for its unique landforms, terrain, and the cultures of the people who may live there, all deserts share a common condition: aridity, or lack of water. Aridity is measured primarily in annual rainfall. Most deserts receive fewer than ten inches of rainfall yearly; some go for years without ever receiving rain.

Desert plants and animals have highly evolved behaviors that enable them to conserve water in these exceedingly dry climates: the saguaro cactus and the kangaroo rat in North American deserts; plants and camels in the Sahara; and marsupials in the Australian Outback are just a few examples that have adapted to their environments so they can survive and reproduce. Some people, including the San in the Kalahari Desert and the Aboriginal peoples of Australia, have also adapted to the desert.

One major problem facing some deserts today is desertification—which is when erosion, coupled with land use by human beings—causes the desert to grow larger. As more important minerals and valuable substances, such as oil, are discovered in the desert, environmentalists fear further damage to native species.

What Students Should Already Know

Students in Core Knowledge Schools should already be familiar with:

Kindergarten through Grade 5:

- What maps and globes represent and how to use them
- What rivers, lakes, and mountains are and how they are represented on maps and globes
- The use of map keys and symbols and directions (east, west, north, south) on a map
- The use of scale, an atlas, and online resources
- Measuring distances using map scales
- Reading maps and globes using longitude and latitude, coordinates, and degrees
- Time zones: prime meridian; Greenwich, England; international date line
- Reading relief maps for elevations and depressions
- The location of the Atlantic, Pacific, Indian, and Arctic oceans, the North and South poles, and the seven continents
- The location of the Northern American countries (Canada, the United States, and Mexico), Central America, the equator, and the Northern and Southern hemispheres
- The meaning of *peninsula*, *harbor*, *bay*, *island*, *coast*, *valley*, *prairie*, *desert*, *oasis*, *boundary*, *channel*, *delta*, *isthmus*, *plateau*, *reservoir*, and *strait*
- Canada (French and British heritage; French-speaking Quebec; Rocky Mountains; Hudson Bay, St. Lawrence River, and the Yukon River; division into provinces; major cities including Montreal, Quebec, and Toronto, Ontario)
- Important rivers of the world (terms include *source*, *mouth*, *tributary*, and *drainage basin*); Asia's Ob, Yellow or Huang He, Yangtze or Chang Jiang, Ganges, Indus, Tigris, and Euphrates rivers; Africa's Nile, Niger, and Congo rivers; South America's Amazon, Paraná, and Orinoco Rivers; North America's Mississippi, Mackenzie, and Yukon rivers; Australia's Murray and Darling rivers; and Europe's Volga, Danube, and Rhine rivers)
- Major mountain ranges by continent (South America: Andes; North America: Rockies and Appalachians; Asia: Himalayas and Urals; Africa: Atlas Mountains; Europe: Alps and Caucasus)
- Important lakes of the world (terms include *lake*, *gulf*, *outlet*, and *strait*); Africa: Lake Victoria, Lake Tanganyika, Lake Chad; South America: Lake Maracaibo, Lake Titicaca; North America: the Great Lakes—Huron, Ontario, Michigan, Erie, Superior; Eurasia: Lake Baikal, Caspian Sea, Aral Sea)

What Students Need to Learn

The first five objectives were taught previously in Grades 4 and 5 in Core Knowledge schools, but are included as Grade 6 objectives to ensure that these fundamental skills and concepts are reviewed and practiced.

- Review using longitude and latitude, coordinates, degrees, time zones, prime meridian (0 degrees longitude, Greenwich, England), and the international date line (180° longitude) on maps or globes.
- Review the Tropic of Cancer and Tropic of Capricorn and their relation to seasons and temperature.
- Review the climate zones: arctic, tropical, temperate.
- Review imaginary lines and boundaries: Arctic Circle and Antarctic Circle.
- Review the distortions of mercator, conic, and plane projections.
- Major deserts by continent (Africa: Sahara, Kalahari; Australia: the Outback; Asia: Gobi, much of the Arabian Peninsula; North America: Mojave, Chihuahuan, Sonoran; South America: Atacama Desert and Patagonia)

AT A GLANCE

The most important ideas in Unit 1 are:

- Students should recognize the grid pattern that parallels of latitude and meridians of longitude create on a map and globe.
- The polar climate zone, which includes the Arctic and the Antarctic region, is typically cold with little precipitation; the tropical zone is typically hot with a great deal of precipitation; and the temperate zone has more variation in temperature and amount of precipitation.
- The international date line, at 180° longitude, marks the shift in days between east and west.
- The Arctic Circle and the Antarctic Circle are lines of latitude that demarcate the extreme northern and southern areas of the planet—areas that experience up to twenty-four hours of daylight per day during the summer and up to twenty-four hours of darkness per day during the winter.
- Maps are representations of Earth that are made using different projections. Each projection distorts various areas of Earth in different ways.
- Deserts are areas of land in which evaporation exceeds precipitation.
- A desert may be considered hot or cold, depending on the desert's location in relation to the equator.

- All deserts experience a dramatic difference between daytime and nighttime temperatures.
- Deserts may have different landforms, such as mountains, plateaus, or plains, and different surfaces, such as sand, gravel, or bare bedrock.
- Deserts are shrinking on some continents, but expanding in other places, especially Africa.
- Students should know the names of major deserts on each continent.

WHAT TEACHERS NEED TO KNOW

Note: Students in Core Knowledge schools using CKHG™ may have been taught these same map skills in Grade 5 Unit 1, *World Lakes*.

Background

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

Spatial Sense (Working with Maps, Globes, and Other Geographic Tools)

Measuring Distance Using Map Scale

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

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

Longitude and Latitude, Coordinates, and Degrees

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

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

The dividing lines for the Eastern and Western hemispheres are the prime meridian (also called the Greenwich meridian) and the 180th meridian. These two imaginary lines are on opposite sides of Earth. The prime meridian refers to 0° longitude, an imaginary line that runs from the North Pole to the South Pole going through the Royal Observatory in Greenwich, a suburb of London, England. The international date line also runs from the North Pole to the South Pole, generally following the 180th meridian. (It deviates in a few places to avoid dividing Siberia and also to include the Aleutian Islands with Alaska.)

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

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

Parallels and meridians intersect on maps and globes in a grid pattern. To find a location on the grid, a person needs to know the coordinates of the location, that is, the point where the latitude and longitude intersect. For example, Washington, D.C., lies at $38^\circ 53'$ N latitude and $77^\circ 2'$ W longitude. If we wanted to say these coordinates out loud, we would say "thirty-eight degrees and fifty-three minutes north latitude and seventy-seven degrees and two minutes west longitude." The first set of numbers specifies a latitude north of the equator, and the second specifies a longitude west of the prime meridian. Although the *Core Knowledge Sequence* only stipulates that students learn about degrees, you may want to mention minutes as well, because this will enable them to locate places more exactly.

Students need to practice finding coordinates on maps. The maps in this unit's Student Reader provide an opportunity for such practice. Also, the Additional Activities included in this Teacher Guide will reinforce the geographical terms and concepts students are learning. Continue to practice all of these skills throughout the year by asking students to work with maps of countries they will study in later units in this grade (e.g., Greece, Italy, France, Great Britain, and the United States).

Tropic of Cancer and Tropic of Capricorn

The area between the Tropic of Cancer (23° N latitude) and the Tropic of Capricorn (23° S latitude) is known as *the tropics* or *the low latitudes*. It has the *highest annual average* temperatures on Earth. The Tropic of Cancer is a parallel that measures 23° N (or 23.5° N) and runs through Mexico, the Bahamas, Egypt, Saudi Arabia, India, and southern China. The Tropic of Capricorn measures 23° S (or 23.5° S) and runs through Australia, Chile, southern Brazil, and northern South Africa. The Tropic of Cancer and the Tropic of Capricorn were so named because of the particular constellations that the sun is in at the time of their respective solstices, or the time when the vertical sun is the farthest north or south of the equator. The sun appears directly over the Tropic of Cancer during the Northern Hemisphere's summer solstice and directly over the Tropic of Capricorn during the Southern Hemisphere's summer solstice.

Earth rotates on its axis, and at the same time, it revolves around the sun. Earth is tilted at an angle of 23.5°, which means that all locations on Earth do not receive the same amount of direct sunlight. The areas close to the equator receive the most direct sunlight and, therefore, have the hottest average temperatures year-round. The North and South poles, the areas farthest away from the equator have extreme cold temperatures year-round. The polar regions have two defined seasons. Because of the tilt of Earth, polar areas—and the high latitudes in general—have twenty-four hours of sunlight in the summer and twenty-four hours of darkness in the winter. The farther a place is from the equator, the more pronounced the differences will be between summer and winter in terms of length of the days and nights.

Climate Zones: Arctic, Tropical, and Temperate

There are three main categories of climate—arctic (also known as polar), tropical, and temperate.

- The arctic climate is often referred to as the polar climate by geographers because the term *polar* makes it clear that the climate includes both the Arctic and Antarctic areas. Polar climates have cool to cold summers and cold to very cold winters. Temperatures average below 32°F year-round on the Antarctic and Greenland ice caps and drop to well below 0°F during the long, dark winter months. Precipitation is scant, averaging only a few inches each year, and most of it falls in the form of snow. A band of subpolar climate stretches across northern North America and Eurasia. Here, one gets short summers with average temperatures above freezing for two or three months; then the temperature plunges below freezing throughout the remainder of the year. Most of this region receives between five and ten inches of precipitation, with some areas receiving up to twenty inches. Snowfall can occur during any month.

- Tropical climate includes some belts of climate with hot, wet weather year-round and some with hot weather that is dry part of the year and wet part of the year. Areas with wet weather all year are typically rainforests. Rainforests can receive as much as four hundred inches of rain annually. Hot areas with alternating wet and dry patterns are savannas, or plains with tall grasses. Savannas receive about fifty inches of precipitation a year. Temperatures average above 68°F throughout the year in the tropics. Tropical rainforests thrive around the equator in Africa and in South America, Southeast Asia, Indonesia, Borneo, and New Guinea. A large belt of savanna exists north and south of the rainforests in Africa.
- Temperate zones of climate are found in the middle latitudes, between the tropics and the polar areas. In general, temperate climates are characterized by warm to hot summers and cool to cold winters, with variations depending on latitude. Throughout much of these regions, temperatures can rise above 100°F in the summer and drop well below freezing in the winter. The temperate zones experience dramatic changes in seasons, with transitional periods during spring and fall. Precipitation varies from a few inches in the mid-latitude desert regions to more than one hundred inches in some areas. Snowfall occurs during winter months in many temperate zone locations. These are regions of considerable variability in both weather and climate. Large parts of the United States, Europe, and Asia have temperate climates.

Time Zones

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

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

CITY C CITY B CITY A

The sun rises first in the easternmost city, which is City A. In actuality, of course, the sun is not “rising”; rather, Earth is rotating. But from our position on Earth, it looks as though the sun is rising. After some time passes and the planet rotates a little more, the sun will rise in City B. Then, after a little more time and a bit more rotation, the sun will come up in City C. If each city based its time completely on its position relative to the sun, then the time would be slightly different in each city, and this could be very confusing. It might be 8:20 in City A, 8:10 in City B, and 8:00 in City C. And if you were on a train halfway

between City B and City C, it would be 8:05. To avoid this kind of confusion, people have agreed to divide the globe into twenty-four time zones, each one hour apart. If City A, City B, and City C are all in the same time zone, this means that the people in these locations have agreed to refer to a particular moment in time as 8:00 a.m., even though the actual “solar time” may be a few minutes earlier than that in one of the cities and a few minutes later in another.

As noted earlier, longitude is measured east and west from the prime meridian, or 0° , located at Greenwich, England. The 180° line, or international date line, is in the Pacific Ocean. The international date line marks the difference in time between east and west. (The international date line actually zigs and zags from north to south to avoid running directly through settled islands.) When crossing the international date line going west, a traveler moves forward to the next day (Tuesday becomes Wednesday). When going east, a traveler goes back one day (Wednesday becomes Tuesday). The international date line is a difficult concept to explain. At this age it is sufficient that students know the date line exists and understand that it is related to time zones and to the rotation of Earth. They do not need to understand exactly why the international date line was created.

Arctic Circle and Antarctic Circle

The Arctic Circle and the Antarctic Circle are imaginary lines that are drawn around Earth near the North and South poles. The Arctic Circle is at 66.5° N (or $66^\circ 33'$ N) latitude, and the Antarctic Circle is at 66.5° S (or $66^\circ 33'$ S) latitude. The North Pole is within the Arctic Circle; the South Pole is within the Antarctic Circle.

Earth tilts slightly on its axis. As it makes its 365-day orbit around the sun, this tilt causes first the Northern Hemisphere and then the Southern Hemisphere to be tilted toward the sun for a period of months. When this occurs, the polar area of the hemisphere—either the Arctic Circle or the Antarctic Circle—has six months of daylight, up to twenty-four hours per day. When the hemisphere is tilted away from the sun, the polar area has up to twenty-four hours of darkness per day. Only the poles have six months of continuous daylight and six months of continuous darkness. This effect lessens further from the poles, with the Arctic and Antarctic circles experiencing just one day of complete light and dark per year. For the Southern Hemisphere, extended periods of daylight within the Antarctic Circle—and summer—begin on around December 22. For the Northern Hemisphere, this date marks the beginning of extended periods of night and winter within the Arctic Circle.

From a Round Globe to a Flat Map

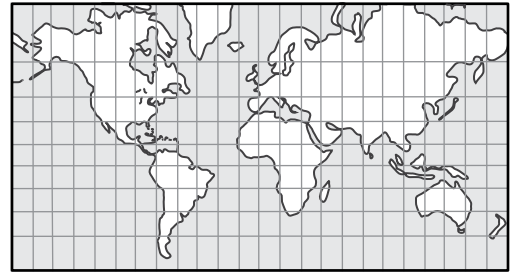
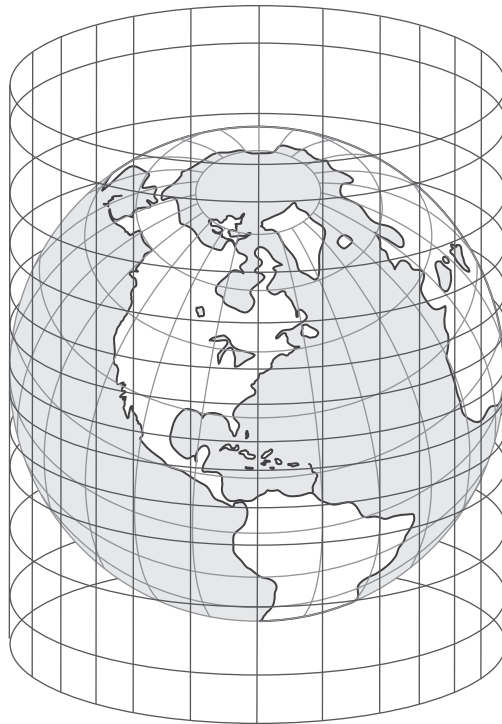
Although globes are more accurate models of Earth than flat maps, you can't fold a globe up and take it with you on a trip. Maps—pictorial representations of the location of various places—are a way to make the information on a globe portable.

If Earth were flat, it would be easy to make a map of it on a flat sheet of paper. But Earth is shaped like a sphere. This poses certain difficulties for cartographers. Whenever you transfer information about a spherical planet onto a flat sheet of paper, there will be a certain amount of distortion. The act of transferring information from a globe to a flat map is called *projection*. There are various ways of projecting information from a globe onto a flat page. Each way distorts the original information in a distinctive way.

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

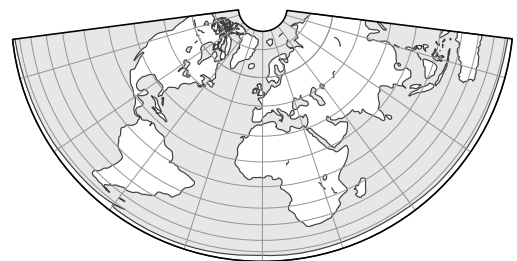
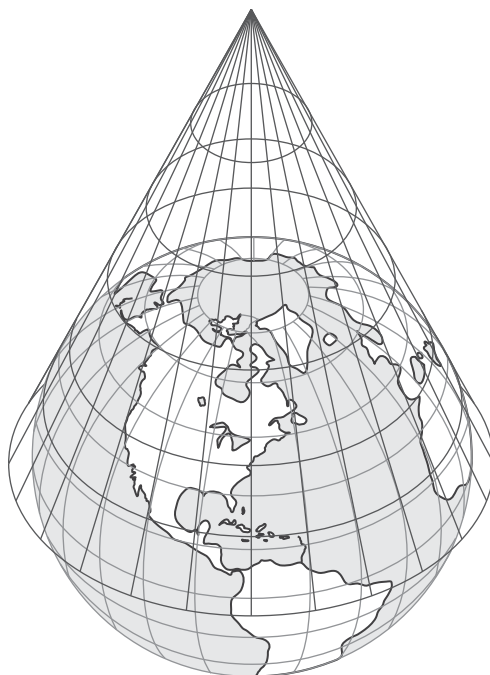
Mercator Projection

In 1569, the cartographer Gerardus Mercator developed a projection scheme that is still widely used today. Mercator projected the globe's features onto a cylinder, in roughly the way described above. The Mercator projection is accurate for the tropics but distorts the areas near the poles (such as Alaska and Greenland), making them look much larger on the resulting map than they are. The shapes of the landmasses are accurate, but the sizes and distances between areas are not. Direction, however, is accurate, which is what Europeans moving east and west between Europe and the Americas during the Age of Exploration wanted to know.



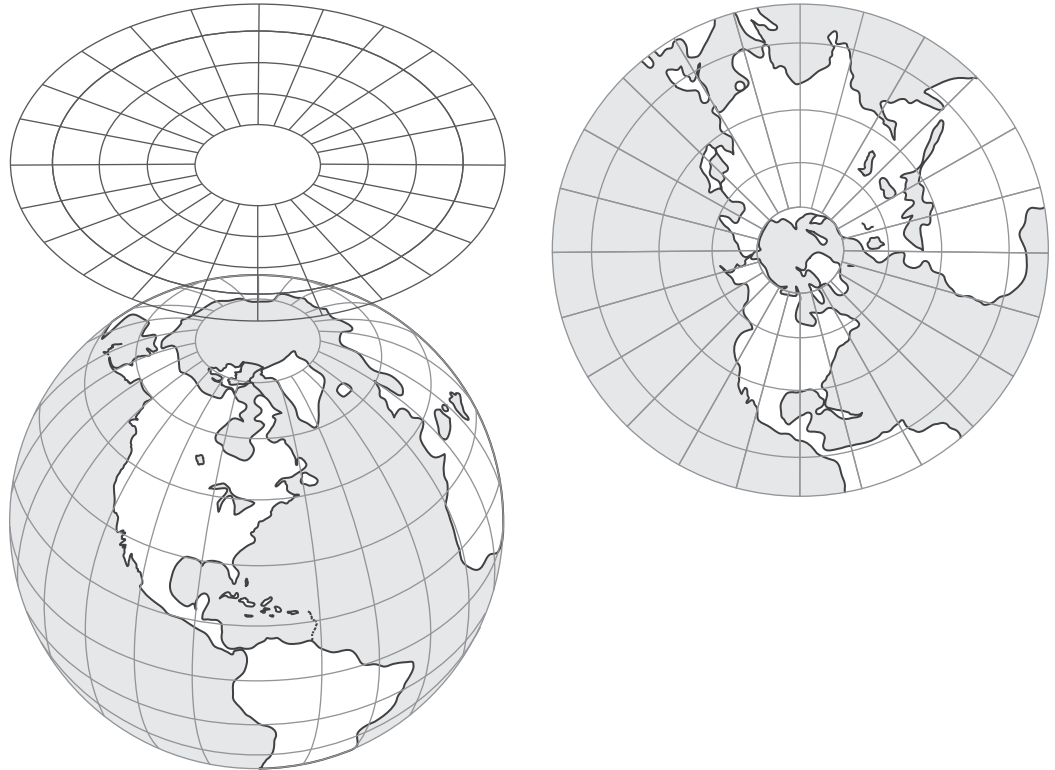
Conic Projection

In a conic projection, a sheet of paper is twisted into a cone and placed over the globe so that the circular “top” of the cone touches the globe. Features on the globe are then projected onto the paper. The resulting map is reproduced as a rectangular map with curved parallels and meridians. This is different than the Mercator projection, which has straight lines. A map made using conic projection is most accurate for the areas on the globe that touch the cone. Conic maps are not good for showing large areas, like the whole globe. However, they are good for showing smaller areas, especially smaller areas in middle latitudes. Direction and distance are also relatively accurate.



Plane Projection

In a plane projection, a flat sheet of paper is placed against the side of a globe so that it touches the globe at one point only. (Recall that in a Mercator projection, the paper was wrapped around the globe to make a cylinder and made contact with the globe all along the equator.) Plane projection produces a map that is accurate at the point where it touches but is less accurate as you move away from the point of contact. The plane projection is also called the *azimuthal* (/az*em*muth*al/) projection. A common form of this projection is a polar projection, in which the North or South pole is used as the central point of contact.



Robinson Projection

The Robinson projection is the most commonly used in textbooks. It is called a *compromise projection* because it tries to strike a compromise among some of the other kinds of projections. The goal is to minimize the limitations and distortions inherent in the other schemes while capturing their strengths. In a Robinson projection, the shape and size of continents is somewhat distorted, but less so than with the Mercator projection. The areas around the poles appear somewhat flatter than they are on a globe, but the areas at the eastern and western edges of the projection are fairly accurate. As is the case with conic projections, the parallels and meridians on the resulting map are curved.

To learn more about specific topics in *World Deserts*, download the CKHG Online Resource "World Deserts":

www.coreknowledge.org/ckhg-online-resources

UNIT RESOURCES

Student Component

World Deserts Student Reader—six chapters

Teacher Components

World Deserts Teacher Guide—six chapters. The guide includes lessons aligned to each chapter of the *World Deserts* Student Reader, with a daily Check for Understanding and Additional Activities, such as vocabulary practice and virtual field trips, designed to reinforce the chapter content. A Unit Assessment, Performance Task Assessment, and Activity Pages are included in Teacher Resources, beginning on page 58.

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

USING THE TEACHER GUIDE

Pacing Guide

The *World Deserts* unit is one of eight history and geography units in the Grade 6 *Core Knowledge Curriculum Series™*. A total of ten days has been allocated to the *World Deserts* unit. We recommend that you do not exceed this number of instructional days to ensure that you have sufficient instructional time to complete all Grade 6 units.

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

Reading Aloud

Cognitive science suggests that even in the later elementary grades and into middle school, students' listening comprehension still surpasses their independent reading comprehension (Sticht, 1984).

For this reason, in the *Core Knowledge Curriculum Series™*, reading aloud continues to be used as an instructional approach in these grades to ensure that students fully grasp the content presented in each chapter. Students will typically be directed to read specific sections of each chapter quietly to themselves, while other sections will be read aloud by the teacher or a volunteer. When you or a student reads aloud, always prompt students to follow along. By following along in this way, students become more focused on the text and may acquire a greater understanding of the content.

Turn and Talk

After reading each section of the chapter, whether silently or aloud, Guided Reading Supports will prompt you to pose specific questions about what students have just read. Rather than simply calling on a single student to respond, provide students with opportunities to discuss the questions in pairs or in groups. Discussion opportunities will allow students to more fully engage with the content and will bring to life the themes or topics being discussed. This scaffolded approach, e.g., reading manageable sections of each chapter and then discussing what has been read, is an effective and efficient way to ensure that all students understand the content before proceeding to the remainder of the chapter.


Building Reading Endurance and Comprehension

Independent
Reading



The ultimate goal for each student is to be capable of reading an entire chapter independently with complete comprehension of the subject matter. Therefore, while it is important to scaffold instruction as described above to ensure that students understand the content, it is also important to balance this approach by providing opportunities for students to practice reading longer and longer passages entirely on their own.

One or more lessons in each Grade 6 CKHG unit will be designated as an Independent Reading Lesson in which students are asked to read an entire chapter on their own before engaging in any discussion about the chapter.

A  adjacent to a lesson title will indicate that it is recommended that students read the entire chapter independently.

During each independent reading lesson, students will be asked to complete some type of note-taking activity as they read independently, to focus their attention on key details in the chapter. Each student will also respond, as usual, by writing a response to the lesson's Check for Understanding.

It will be especially important for the teacher to review all students' written responses to any independent reading prior to the next day's lesson to

ascertain whether all students are able to read and engage with the text independently and still demonstrate understanding of the content.

If one or more students struggle to maintain comprehension when asked to read an entire chapter independently, we recommend that during the next opportunity, you pull these students into a small group. Then, while the remainder of the class works independently, you can work with the small group using the Guided Reading Supports that are still included in the Teacher Guide for each lesson.

Big Questions

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

Chapter	Big Questions
1	What features determine whether an area of land is a desert?
2	What are the similarities and differences between the Sahara and Kalahari deserts?
3	What strategies have the Aboriginal peoples adopted in order to survive the harsh conditions of desert life?
4	How would you compare the Gobi Desert to the deserts of the Arabian Peninsula?
5	If you had to survive in a desert for several days, what would you need?
6	What are the key features of the Patagonia Desert and the Atacama Desert?

Core Vocabulary

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

Chapter	Core Vocabulary
1	polar, climatologist, evaporation, precipitation, desertification, semiarid
2	oasis, salt flat, radiate, game reserve, basin
3	scrub brush, interior, riverbed, marsupial, nomadic
4	salt marsh, peninsula, Bedouin, fossil fuel
5	yucca, fault line, sea level, hemisphere, lava rock
6	tableland, basalt, terrain, observatory

Activity Pages

Activity Pages



AP 1.1

AP 1.2

AP 1.3

AP 1.4

AP 2.1

AP 2.2

AP 4.1

AP 5.1

AP 6.1

AP 6.2

AP 6.3

The following activity pages can be found in Teacher Resources, pages 70–84. They are to be used with the chapter specified either for additional class work or for homework. Be sure to make sufficient copies for your students prior to conducting the activities.

- Chapters 1–6—World Map (AP 1.1)
- Chapter 1—Imaginary Lines (AP 1.2)
- Chapter 1—Latitude as Climate Indicator (AP 1.3)
- Chapter 1—Three Different Map Projections (AP 1.4)
- Chapter 2—Map of Africa (AP 2.1)
- Chapters 2–6—Hot and Cool Facts About World Deserts (AP 2.2)
- Chapter 4—Map of Asia (AP 4.1)
- Chapter 5—Map of North America (AP 5.1)
- Chapter 6—Map of South America (AP 6.1)
- Chapter 6—Domain Vocabulary: Chapters 1–6 (AP 6.2)
- Chapter 6—World Deserts Review: Where Am I? (AP 6.3)

Additional Activities and Website Links

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

- Aloian, Molly. *The Gobi Desert*. Ontario: Crabtree Publishing Company, 2012.
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- Aronson, Marc. *Trapped: How the World Rescued 33 Miners from 2,000 Feet Below the Chilean Desert*. New York: Atheneum Books for Young Readers, 2011.
- The Desert Awareness Committee. *Chloe and the Desert Heroes: A Tale of Adventure in the Sonoran Desert*. Scottsdale, AZ: The Desert Awareness Committee, 2017.
- Gowan, Barbara. *D Is for Desert: A World Deserts Alphabet*. Ann Arbor, MI: Sleeping Bear Press, 2012.
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- Robson, Gary. *Who Pooped in the Sonoran Desert: Scat and Tracks for Kids*. Helena, MT: Far Country Press, 2006.
- Rosenberg, Aaron, and Leonard, Dion. *Finding Gobi: Young Reader's Edition: The True Story of One Little Dog's Big Journey*. Nashville: Thomas Nelson, 2017.
- Roth, Susan L., and Trumbone, Cindy. *Prairie Dog Song: The Key to Saving North America's Grasslands*. New York: Lee & Low Books, 2016.
- Williams, Mary, and Christie, R. Gregory. *Brothers in Hope: The Story of the Lost Boys of Sudan*. New York: Lee & Low Books, 2005.
- Wright-Frierson, Virginia. *A Desert Scrapbook: Dawn to Dusk in the Sonoran Desert*. New York: Aladdin, 2002.

WORLD DESERTS SAMPLE PACING GUIDE

For schools using the *Core Knowledge Sequence*.

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

Week 1

Day 1


Day 2

Day 3

Day 4

Day 5

World Deserts

"World Geography" (TG, Chapter 1, Additional Activities, AP 1.1–1.4)	"World Geography" (continued) (TG, Chapter 1, Additional Activities, AP 1.1–1.4)	"What is a Desert?" Core Lesson (TG & SR, Chapter 1, TG, AP 1.1)	"Deserts of Africa" and "Hot and Cool Facts About World Deserts" Core Lesson (TG & SR, Chapter 2, TG, AP 2.2; AP 2.1)	 "Australia, A Dry Continent" and "Hot and Cool Facts About World Deserts" Core Lesson (TG & SR, Chapter 3, TG, AP 2.2; AP 1.1)
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Week 2

Day 6


Day 7

Day 8

Day 9

Day 10

World Deserts

"Deserts of Asia" and "Hot and Cool Facts About World Deserts" Core Lesson (TG & SR, Chapter 4, TG, AP 2.2; AP 1.1 & 4.1)	"Deserts of North America" and "Hot and Cool Facts About World Deserts" Core Lesson (TG & SR, Chapter 5, TG, AP 2.2; AP 1.1 & 5.1)	 "Deserts of South America" and "Hot and Cool Facts About World Deserts" Core Lesson (TG & SR, Chapter 6, TG, AP 2.2; AP 1.1 & 6.1)	"World Deserts Review: Where Am I?" (TG, Chapter 6, Additional Activities, AP 6.3)	Unit Assessment
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WORLD DESERTS PACING GUIDE

_____’s Class

(A total of ten days has been allocated to the *World Deserts* unit in order to complete all Grade 6 history and geography units in the *Core Knowledge Curriculum Series™*.)

Week 1

Day 1

Day 2

Day 3

Day 4

Day 5

World Deserts

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Week 2

Day 6

Day 7

Day 8

Day 9

Day 10

World Deserts

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CHAPTER 1

What Is a Desert?

The Big Question: What features determine whether an area of land is a desert?

Primary Focus Objectives

- ✓ Read maps and globes using longitude and latitude, coordinates, and degrees. **(RI.6.7)**
- ✓ Describe the three climate zones: arctic, tropical, and temperate. **(RI.6.2)**
- ✓ Identify the Arctic Circle and Antarctic Circle as imaginary lines on a map and the relative locations of the North and South poles. **(RI.6.7)**
- ✓ Understand that maps created to represent Earth contain distortions. **(RI.6.2)**
- ✓ Understand that the shared feature of all deserts—regardless of location—is aridity, or lack of water. **(RI.6.2, RI.6.4)**
- ✓ Describe the difference between a hot desert and a cold desert. **(RI.6.4)**
- ✓ Describe the various ways that plants, animals, and humans adapt to and change the desert. **(RI.6.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *polar*, *climatologist*, *evaporation*, *precipitation*, *desertification*, and *semiarid*. **(RI.6.4)**

What Teachers Need to Know

For background information, download the CKHG Online Resource “What Is a Desert?”:

www.coreknowledge.org/ckhg-online-resources

Note: Prior to conducting the Core Lesson, in which students read Chapter 1 of the *World Deserts* Student Reader, we strongly recommend that you first conduct the World Geography activities (AP 1.1, AP 1.2, AP 1.3, AP 1.4) found in Teacher Resources (pages 70–73) and described at the end of this chapter under Additional Activities. We suggest that you allocate two instructional days to the completion of these activities, as per the Sample Pacing Guide on page 17. Providing students with an understanding of maps as geographic tools will help them better understand the locations of the deserts studied in this unit. Providing students with an understanding of latitude and climate will help deepen their understanding of the human and physical geography of deserts.

Materials Needed

Activity Pages



AP 1.1

AP 1.2

AP 1.3

AP 1.4

- Display and individual student copies of World Map (AP 1.1)
- Display and individual student copies of Imaginary Lines (AP 1.2)
- Display and individual student copies of Latitude as Climate Indicator (AP 1.3)
- Display and individual student copies of Three Different Map Projections (AP 1.4)
- Internet access to the DK findout! link, “What is a Desert?,” downloadable at: www.coreknowledge.org/ckhg-online-resources

Core Vocabulary (Student Reader page numbers listed below)

polar, adj. relating to a geographic pole or the area around it (2)

Example: The polar area has cool to cold summers and cold to very cold winters.

climatologist, n. a scientist who studies weather patterns over time (4)

Example: The climatologist studied how the weather of the Sahara has changed over the last one hundred years.

Variations: climatologists

evaporation, n. the process by which a liquid changes to a vapor or gas (4)

Example: Water turning into steam is an example of evaporation.

Variations: evaporate (verb)

precipitation, n. water falling to Earth’s surface as rain, hail, snow, or sleet (4)

Example: The forecast called for precipitation, so Emma brought her umbrella.

desertification, n. natural or human processes that turn fertile land into a desert (10)

Example: Overgrazing land can cause desertification.

semiarid, adj. describing locations with little precipitation, but with enough moisture to support the growth of grasses, shrubs, and a few scattered trees (10)

Example: Semiarid regions typically receive between ten and twenty inches of annual rainfall.

THE CORE LESSON 35 MIN

Introduce *World Deserts* Student Reader

5 MIN

Distribute copies of the *World Deserts* Student Reader, and suggest students take a few minutes to look at the cover and flip through the Table of Contents and images in the book. Ask students to brainstorm individual words or simple

phrases describing what they notice in the Table of Contents and various images; record this information in a list on the board or chart paper. Students will likely mention sand, dry land, cacti, and animals.

Activity Page



AP 1.1

Display the activity page, World Map (AP 1.1). Explain to students that they will be reading about deserts on five of the seven continents—Africa, South America, North America, Australia, and Asia. Students will learn about the features of the different deserts and how people, plants, and animals have adapted to the harsh desert environment.

Introduce “What Is a Desert?”

5 MIN

Have students study the image on pages 2–3 of the Student Reader. Ask volunteers to describe what they see. Point out that when many people think of deserts, this image is what they imagine. However, not all deserts look like this one.

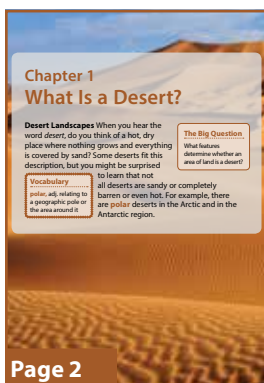
Tell students they will be reading about characteristics that all deserts share, but then will be introduced to features that can differ among deserts. Call students’ attention to the Big Question. Tell students to look for facts and observations that classify what a desert is.

Guided Reading Supports for “What Is a Desert?”

25 MIN

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

“Desert Landscapes,” Pages 2–5



Scaffold understanding as follows:

Invite volunteers to read the section “Desert Landscapes” aloud.

CORE VOCABULARY—Stop to explain the meanings of the vocabulary terms *polar*, *climatologist*, *evaporation*, and *precipitation* when they are encountered in the text.

Note: Students in Core Knowledge schools may recall the related term *evaporate* from their Grade 5 study of *World Lakes* and *evaporation* from their Grade 5 study of *Westward Expansion After the Civil War*.

SUPPORT—Call attention to and have students read the chart on page 4. Emphasize to students the importance of knowing how the relationship between precipitation and evaporation determines the classification of a desert. Explain that these large cities probably don’t come to mind when thinking about deserts in the United States, but point out how close Los Angeles is to meeting the precipitation qualification at just fifteen inches of rainfall a year.



After volunteers read the text, ask the following questions:

LITERAL—Where are the polar deserts?

» The polar deserts are in the Arctic and Antarctic region.

LITERAL—How do most climatologists define the word *desert*?

» They define *desert* as a place where evaporation exceeds precipitation.

EVALUATIVE—Why do plants and animals use only a small percentage of rainwater in the desert?

» Rainwater in the desert either runs off in a flash flood or evaporates before it can be used.

Most climatologists define the word *desert* as a place where evaporation exceeds precipitation. One feature of a desert can be its dryness, or aridity. One way of assessing the dryness of a place is by measuring how many inches of precipitation it gets in an average year. Most deserts get less than ten inches of precipitation a year—this is also true of the Arctic and the Antarctic region. Compare that meager ten inches with the average yearly precipitation in some major American cities:

City	Average Yearly Precipitation
New Orleans	61 inches
New York City	42 inches
Chicago	30 inches
Dallas	29 inches
San Francisco	23 inches
Los Angeles	13 inches

Word Study
Climatologist is a scientist who studies weather patterns over time.
Evaporation is the process by which a liquid changes to a vapor or gas.
Precipitation is water falling to Earth's surface as rain, hail, snow, or sleet.

“Desert Temperatures” and “Desert Landforms,” Pages 5–7

Scaffold understanding as follows:

Have students silently read the section “Desert Temperatures” on pages 5–6.

SUPPORT—Draw students’ attention to the map on page 6. Have students locate the deserts mentioned in the section: the Sahara, the Gobi, and the Arctic. Explain that Death Valley is in the Mojave Desert, and have students locate that desert on the map.

Have students silently read the section “Desert Landforms” on page 7.

SUPPORT—Point to the images on page 7, and explain that deserts can have varied landscapes, from the typical sandy dunes, as in the picture of the Great Sand Dunes National Park in southern Colorado, to ravines, gullies, and canyons caused by flash floods. Explain that they will see pictures later in the chapter of other types of desert landforms, such as treeless tablelands—or plateaus—plains spotted with scrub brush, and salt flats and seas.

Even when it does rain in a desert, plants and animals are often only able to use a small amount of the rainwater. For example, sudden thunderstorms can cause heavy rainfall, but the water quickly runs off in flash floods and does not soak into the ground. When a light shower falls over a dry desert area, most of the rain evaporates before it touches the ground because the air is so dry.

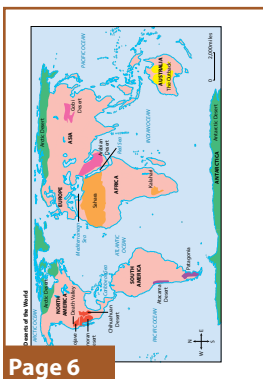
The strength of the sun is also a factor. When temperatures are very high, as they are in many deserts, evaporation speeds up. Because of this, the water has less time to soak into the parched soil.

Desert Temperatures

Many deserts are hot as well as dry. Not surprisingly, deserts near the equator are very hot. In the Sahara in Africa, daytime temperatures routinely soar well above 100° Fahrenheit (F). However, the highest recorded recorded temperature was measured on July 10, 1913, at Greenland Ranch in Death Valley, California. On that day, the temperature reached 134° F.

Deserts far from the equator tend not to have the scorching hot temperatures of the Sahara. In fact, during the winter, these deserts can be freezing cold. The average winter temperature in the Gobi in northern China is 10° to 15° F. And then there are the polar deserts. In the Arctic Polar Desert, the winter temperatures can drop below -60° F.

One feature that both “hot” and “cold” deserts share is a dramatic change between daytime and nighttime temperatures. At night, the temperature in a hot desert can drop anywhere from 30° to 70° F. Clouds keep warm air near the ground. Desert skies, whether they are hot or dry, are often cloudless, so at night much of the heat rises into the sky, leaving the desert much colder than it is in the daytime.





After students read the text, ask the following questions:

EVALUATIVE—How are deserts closer to the equator different from those farther from the equator?

- » Deserts near the equator can be very hot. Deserts farther from the equator don't get the same scorching temperatures and can get freezing cold in winter.

EVALUATIVE—What feature do “hot” and “cold” deserts share?

- » Both “hot” and “cold” deserts experience big changes between daytime and nighttime temperatures.

EVALUATIVE—Do deserts have to have sand to be considered a desert? Explain.

- » No. Many deserts do not have sand, or only have a small percentage of land covered in sand.

“Life in the Desert” and “Growing Deserts,” Pages 8–11



Scaffold understanding as follows:

Read aloud the first two paragraphs of the section “Life in the Desert” on page 8.

SUPPORT—Call attention to the pronunciation key for the word *saguaro*. Say the word aloud and have students repeat it after you. Then direct students to the image of the saguaro on page 9. Review the characteristics of the saguaro that allow it to grow and survive in the desert (thick stem that stores water, no leaves that could lose moisture, and shallow, widespread roots to absorb water).

Invite volunteers to read aloud the next three paragraphs of the section, on pages 8–10.

SUPPORT—Direct students to the image of the kangaroo rat on page 8.

Invite a volunteer to read the last two paragraphs of the section “Life in the Desert” on page 10.

SUPPORT—Point to the image of Las Vegas at the top of page 11, and explain that Las Vegas, despite being a large, bustling city, is located in the Mojave Desert and is considered a desert landscape because it receives fewer than ten inches of rain a year. Have students consider what challenges Las Vegas might face because of its desert location.



It gets moisture from seeds and plant leaves, which contain small amounts of water. However, its main adaptation is the special water recycling system in its own body.

The kangaroo rat's kidneys recycle water internally. The animal loses very little water through natural processes. When a kangaroo rat has to relieve itself, it leaves behind a patch of crystals instead of a stream of liquid urine. Many desert animals, including rats, mice, squirrels, and lizards, are nocturnal. They avoid the harsh heat of the daytime by burrowing deep into the ground and coming out only at night.

People have also learned how to survive in desert areas. For example, some native people of the American Southwest learned how to use irrigation systems to water their crops. Entire Native American societies lived in American desert lands. This is also true of the history of groups of people who live, or once lived, in the great deserts of Africa and Asia.

Today, there are large cities in desert areas of the United States and across the globe. Lots of people have their homes in deserts. New technologies involving irrigation for crops, and dams for storing water, as well as access to deep wells underground, have made life in such environments perfectly possible. Areas of desert have quite literally been transformed into populated city centers.

Growing Deserts

Although desert areas may be shrinking in some parts of the world, they are growing in others. In parts of Africa, desertification is a major problem. African farmers in need of fertilizer have cleared and planted on semiarid lands near the edges of the desert. This has led to the desert spreading away from the edges of the desert.

Vocabulary

desertification is the process by which natural or human processes turn fertile land into a desert.

semiarid, well describing locations with little precipitation, but with enough moisture to support the growth of grasses, shrubs, and a few scattered trees.

Page 10

Las Vegas is a thriving, bustling city in Nevada's Mojave Desert. The average annual rainfall there is 4.4 inches.

Even for Las Vegas, there is little or nothing left to hold back the winds. Often these winds blow away the thin topsoil and blow in desert sand.

Today, about 20 percent of the world is desert. Changes in weather patterns, together with changes in the ways people treat the land, will determine whether that number shrinks, grows, or stays the same.

Page 11

Have students read the section “Growing Deserts” on pages 10–11 to themselves. Encourage them to refer to the vocabulary box as they read.

CORE VOCABULARY—Point out the vocabulary terms *desertification* and *semiarid*, and review their meanings. Note the base word *desert* in the word *desertification*. Explain that the suffix *-ification* means making or producing, so *desertification* literally means making a desert.

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

LITERAL—What features help the saguaro cactus survive in the desert?

- » Thick stems, shallow, widespread roots, and no leaves help the saguaro survive.

LITERAL—How have some animals adapted to the desert?

- » Some animals, such as the kangaroo rat, get moisture from seeds and plant leaves or can go long periods of time without drinking water. Some animals are nocturnal and/or burrow into the ground to escape the desert heat.

LITERAL—How have people learned to adapt to the desert?

- » They have learned to use irrigation to water crops. People have also learned to use technology to transport water from other places, as well as to use dams to store water for future use.

If the Internet is available, display the website “What Is a desert?” and use it to review and reinforce what students have read. Use this link to download the CKHG Online Resources for this unit, where the specific link to the website may be found:

www.coreknowledge.org/ckhg-online-resources



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question: “What features determine whether an area of land is a desert?”
 - » Key points students should cite include: the dryness of the land; the rate of evaporation exceeding the amount of precipitation or rainfall the area receives; a dramatic change between daytime and nighttime temperatures.
- Choose one of the Core Vocabulary words (*polar*, *climatologist*, *evaporation*, *precipitation*, *desertification*, or *semiarid*), and write a sentence using the word.

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

Additional Activities

World Geography

90 MIN

Activity Pages



AP 1.1
AP 1.2
AP 1.3
AP 1.4

Materials Needed: Display copies of World Map (AP 1.1), Imaginary Lines (AP 1.2), Latitude as Climate Indicator (AP 1.3), and Three Different Map Projections (AP 1.4); sufficient student copies of the activity pages; a globe; an orange(s); and blue, red, and yellow markers, colored pencils, or crayons

Note: The four activity pages will require two class periods of 45 minutes each. Be sure to follow your school's policy regarding food distribution and allergies.

World Map (AP 1.1)

Display World Map. Review the locations and names of the oceans and continents.

Imaginary Lines (AP 1.2)

Review the following terms and definitions, which students in Core Knowledge schools studied in Grades 4 and 5:

latitude—the distance between the equator and a place north or south of the equator; measured in degrees

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

coordinates—a pair of numbers on a globe or map that shows where something is located

degree—a unit used to measure the distance between parallels and meridians

Use the globe and World Map to point out the following examples:

Latitude	
Location	Degree
Equator	0°
North Pole	90°N
South Pole	90°S
Tropic of Cancer	23.5°N
Tropic of Capricorn	23.5°S
Arctic Circle	66.5°N
Antarctic Circle	66.5°S

Longitude	
Location	Degree
Prime meridian	0°
International date line	180°

Explain that the prime meridian runs through Greenwich, England, which is why it is sometimes called the Greenwich meridian. Then explain the significance of the international date line: it marks the shift from one day to the next (e.g., from Tuesday to Monday when traveling west to east).

Then use coordinates and degrees to identify the following locations:

	Latitude	Longitude
Greenwich, England	51°29' N	0°
Lake Victoria (Africa)	1°2' S	32°57'E
Washington, D.C.	38°54' N	77°2'W

Point to the approximate location of your town on the map or globe. Guide students to estimate the latitude and longitude coordinates of the town.

Have students complete the Imaginary Lines (AP 1.2) activity page with a partner. Alternatively, you may assign the activity page for homework.

Latitude as Climate Indicator (AP 1.3)

Explain that *climate* is the typical weather pattern in a region. Earth can be divided into different climate categories and zones. There are three general climate categories: arctic (or polar), tropical, and temperate. Zones can often be identified by latitude.

Display World Map (AP 1.1). Point out each climate zone as you describe the climate category.

Arctic (polar)—The arctic climate is often referred to as the polar climate because the term *polar* makes it clear that the climate includes both the Arctic and Antarctic areas (north of the Arctic Circle and south of the Antarctic Circle). Polar climates have cool to cold summers and cold to very cold winters. Temperatures average below 32°F year-round on the Antarctic and Greenland ice caps and drop to well below 0°F during the long, dark winter months. Precipitation is scant, averaging only a few inches each year, and most of it falls in the form of snow. A band of subpolar climate stretches across northern North America and Eurasia. Here, one gets short summers with average temperatures above freezing for two or three months; then the temperature plunges below freezing throughout the remainder of the year. Most of this region receives between five and ten inches of precipitation, with some areas receiving up to twenty inches. Snowfall can occur during any month.

Tropical—The area between the Tropic of Cancer and the Tropic of Capricorn is called the *tropics*. Tropical climate includes some belts of climate with hot, wet weather year-round and some with hot weather that is dry part of the year and wet part of the year. Temperatures average above 68°F throughout the year in the tropics. Areas with wet weather

all year are typically rainforests. Rainforests can receive as much as four hundred inches of rain annually. Tropical rainforests thrive around the equator in Africa and in South America, Southeast Asia, Indonesia, Borneo, and New Guinea. Hot areas with alternating wet and dry patterns are savannas, or plains with tall grasses. Savannas receive about fifty inches of precipitation a year. A large belt of savanna exists north and south of the rainforests in Africa.

Temperate—Temperate zones of climate are found in the middle latitudes, between the tropics and the polar areas. In general, temperate climates are characterized by warm to hot summers and cool to cold winters, with variations depending on latitude. Throughout much of these regions, temperatures can rise above 100°F in the summer and drop well below freezing in the winter. The temperate zones experience dramatic changes in seasons, with transitional periods during spring and fall. Precipitation varies from a few inches in the midlatitude desert regions to more than one hundred inches in some areas. Snowfall occurs during winter months in many temperate zone locations. These are regions of considerable variability in both weather and climate. Large parts of the United States, Europe, and Asia have temperate climates.

Distribute the Latitude as Climate Indicator activity page (AP 1.3), and have students complete it. Students might also complete the activity page for homework.

Three Different Map Projections (AP 1.4)

With World Map (AP 1.1) still on display, hold up the globe, and ask students which one is a more accurate model of Earth. Students should recognize that round globes are more accurate than flat maps. Explain that one advantage to maps is that they are more portable. However, there are problems with converting a spherical Earth onto a flat sheet of paper.

To demonstrate, draw a simple picture on an orange with a pen or marker. Then, peel the orange, and attempt to flatten the orange peel to create a flattened shape. Notice how flattening the peel creates distortions, or errors, in the drawing. (If possible, have students work in small groups to each draw on and peel an orange. If time is short, prepare the orange by drawing on it and peeling it before class.)

The conversion of information from a globe to a map is called a projection. Geographers use many different kinds of projections. Each projection has its own distortions or errors. Some show the size of continents correctly, but do not show the correct shapes. Some are more accurate near the equator than near the poles.

Display the Three Different Map Projections activity page (AP 1.4). Explain that each of these images shows a different type of projection used by mapmakers to represent a round Earth on a flat sheet of paper. Have students examine the projections and answer the following questions (aloud or in writing):

- How are the continents' sizes different in the various projections? Which ones are the most different from the globe? Which ones are the most similar to the globe?
 - » *(Answers will vary. Students might note that particularly in the Mercator projection, size is greatly distorted; for example, Greenland and Alaska appear larger than South America. In the conic projection, Africa—which does not touch the cone, in large part—appears larger than on the globe.)*
- How are the continents' shapes different in the various projections? Which ones are the most different from the globe? Which ones are the most similar to the globe?
 - » *(Answers will vary.)*
- How are the longitude (meridian) and latitude (parallel) lines different in the various projections? Which ones are the most different from the globe? Which ones are the most similar to the globe?
 - » *(Answers will vary. You may explain to students that on the globe and both the conic and plane projections, longitude lines [meridians] meet at the poles, but on the Mercator projection, they are all “up and down,” which spreads the North Pole all across the top of the map, greatly distorting its size.)*

CHAPTER 2

Deserts of Africa

The Big Question: What are the similarities and differences between the Sahara and Kalahari deserts?

Primary Focus Objectives

- ✓ Understand that the Sahara, one of the world's driest deserts, supports plants and animals that have adapted to extremely hot and arid conditions. **(RI.6.2)**
- ✓ Recognize that the Kalahari is known for its rich variety of plants and wildlife. **(RI.6.2)**
- ✓ Explain the ways that the San have adapted to living in the desert. **(RI.6.3)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *oasis*, *salt flat*, *radiate*, *game reserve*, and *basin* **(RI.6.4)**

What Teachers Need to Know

For background information, download the CKHG Online Resource “Deserts of Africa”:

www.coreknowledge.org/ckhg-online-resources

Materials Needed

Activity Pages



AP 1.1

AP 2.1

AP 2.2

- Display copy of World Map (AP 1.1)
- Display copy of Map of Africa (AP 2.1)
- Display and individual student copies of Hot and Cool Facts About World Deserts (AP 2.2)

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

oasis, n. an area in the desert where there are plants and water **(14)**

Example: The caravan stopped at the oasis so the camels could get a drink of water.

Variations: oases

salt flat, n. an area of land where evaporation has left a layer of salt **(15)**

Example: Most plants and animals cannot survive the landscape of a salt flat.

Variations: salt flats

radiate, v. to send out (15)

Example: The sun radiates energy that becomes heat and light when striking Earth.

Variations: radiates, radiated, radiating

game reserve, n. an area set aside by the government where animals are protected from hunters (16)

Example: Visiting a game reserve is a great idea for people who want to see endangered animals in their natural habitat.

Variations: game reserves

basin, n. an area of land that is lower than the land around it (16)

Example: Flooding often occurs in the drainage basin of the river.

Variations: basins

THE CORE LESSON 35 MIN

Introduce “Deserts of Africa”

5 MIN

Remind students that in the previous chapter, they learned about what makes an area of land a desert. Ask students to share the characteristics that define a desert (dryness, more evaporation than precipitation, significant differences between daytime and nighttime temperatures).

Activity Page



AP 1.1

Display World Map (AP 1.1), and have students locate Africa. Tell students that today they will read about the two largest deserts in Africa. Have students refer to the map to name these deserts.

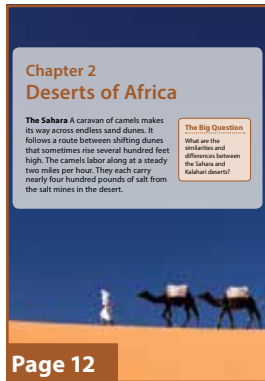
Call students’ attention to the Big Question. Tell students to pay particular attention to the features of these deserts as they read.

Guided Reading Supports for “Deserts of Africa”

30 MIN

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

"The Sahara," Pages 12–16



Scaffold understanding as follows:

Read aloud the first paragraph of “The Sahara” on page 12.

SUPPORT—Draw students’ attention to the image on pages 12–13. Invite a volunteer to read the caption aloud. Have students identify the sand dune and the camels in the photo.

Have students read the next six paragraphs of “The Sahara” on pages 14–15 independently or with a partner. Encourage students to refer to the vocabulary boxes as they read.

CORE VOCABULARY—Point out the vocabulary terms *oasis* and *salt flat*, and explain their meanings. Use the image on page 14 to illustrate what an oasis is.

Note: Students in Core Knowledge schools may recall the term *oasis* from the Grade 4 units *Early and Medieval African Kingdoms* and *Dynasties of China*.

Invite volunteers to read aloud the last two paragraphs of the section “The Sahara” on pages 15–16.

CORE VOCABULARY—Stop to explain the vocabulary term *radiate* when it is encountered in the text.

SUPPORT—Draw students’ attention to the image of a fennec fox on page 15. Make sure students note the size of the fox’s ears and understand how the ears’ size helps the fox survive in the desert.

SUPPORT—Display Map of Africa (AP 2.1), and have students locate and name the countries into which the Sahara extends (*Algeria, Chad, Egypt, Eritrea, Libya, Mali, Mauritania, Morocco, Niger, Sudan, Tunisia, and Western Sahara*).

Activity Page



AP 2.1



After volunteers read the text, ask the following questions:

LITERAL—How are camels suited for life in the Sahara?

» Their long legs keep their bodies high above the hot sand. Their stomachs hold a lot of water. Their humps contain fat that can be used for energy when there’s not enough food.

The Sahara is a patchwork desert of rocky mountains, salt flats, gravel plains, and oases. It stretches about three thousand miles across Africa, from the Atlantic Ocean in the west to the Red Sea in the east. It is 1,200 miles from north to south and covers three and a half million square miles. That's almost the size of the United States.

Daytime temperatures in the summer are extremely hot. But the most deserts, the Sahara does not hold the daytime heat. Nighttime temperatures can sometimes drop to freezing during the cooler months of the year.

The Sahara is drier than most deserts, with an average rainfall of less than four inches per year. There are many years in which no rain falls in some parts of the desert. Nevertheless, the Sahara does have widely scattered permanent water sources, such as oases. And the world's longest river, the Nile, runs through the eastern part of this largest-of-all deserts.

Despite its barren features, much of the Sahara supports a variety of plant and animal life. Many plants have special root systems that reach deep into the earth to find water. Both large and small animals live in the Sahara. There are antelopes that rarely drink water but that get their moisture from the shrubs they eat. Gazelles and wild mountain sheep roam the dusty Sahara. The small fennec fox, whose large ears radiate heat from its body to help keep it cool, also calls the Sahara its home.

The Sahara supports human life too. Although fewer people live in the drier and millions of people live on the desert margins.

Page 15

Vocabulary
 Fennec fox, an animal that rarely drinks water but gets its moisture from the shrubs it eats.
 Oasis, a place where water is found in a dry area of land.

Activity Page



AP 2.2

LITERAL—Describe the landscape of the Sahara.

- » It has rocky mountains, salt flats, gravel plains, and sand seas.

LITERAL—What water sources are available in the Sahara?

- » The Sahara has oases and, in the east, the Nile River.

LITERAL—In addition to camels, what other animals can be found in the Sahara?

- » Antelopes, gazelles, sheep, and fennec foxes all live in the Sahara.

Distribute AP 2.2, Hot and Cool Facts About World Deserts. Explain that students will use this chart to record important details about the deserts described in each chapter. Have students work with a partner to fill in details about the Sahara, using what they have read so far in Chapter 2.

“The Kalahari Desert” and “The San People,” Pages 16–17

Scaffold understanding as follows:

Have students silently read “The Kalahari Desert” on pages 16–17. Encourage them to refer to the vocabulary box as they read.

Some parts of the Kalahari can support a large variety of wildlife. Here you can see herds of animals grazing in the heart of the desert.

A number of African countries have land that extends into this vast desert, including Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Sudan, and Tunisia.

The Kalahari Desert

Far to the south of the Sahara, on the other side of the equator, lies another vast and arid region. The animals are a game reserve in the center of the Kalahari Desert. Unlike the scorched earth of the Sahara, the Kalahari has a rich assortment of plants and wildlife. Because of this, it is sometimes referred to as a “birdland” rather than as a desert.

The Kalahari is a large basin in the central part of Africa. It is almost as large as the Sahara, and it is even larger than the Sahara.

Page 16

Vocabulary
 game reserve, an area of land where animals are protected from hunters.
 Basin, an area of land that is lower than the land around it.

Here and does not fall in predictable patterns. Most of the Kalahari averages about five inches of rain per year. Yet some parts get more than fifteen inches. This is usually enough moisture to support a variety of wildlife—large animals such as wildebeests, lions, antelopes, jackals, cheetahs, gazelles, and ostriches, as well as many small animals, birds, and reptiles. Over thousands of years, one group of people called the San (or Bushmen) learned to adapt remarkably well to the dry conditions of the Kalahari.

The San People

The San learned how to find and save water. They use ostrich eggs as storage containers. Ostrich eggs are the largest eggs laid by any bird. One ostrich egg can hold as much liquid as two dozen chicken eggs. The San make a hole at each end of an ostrich egg. Then they blow out the inside, which they use for food. After a rain, they fill the hollow eggshells with water and tightly plug the two ends. Then they bury the filled shells in the sand along their routes. When the droughts come, as they always do, the San have a water supply.

Page 17

Here is a picture of the San in the desert. Here you can see water during a rain.

CORE VOCABULARY—Point out the vocabulary terms *game reserve* and *basin*, and review their meanings. Discuss the word *game* in the term *game reserve* and how it applies to animals. Remind students that some words have multiple meanings, and it’s important to read words in the context of their sentence and surrounding sentences to determine the correct meaning.

Read aloud “The San People” on page 17.

SUPPORT—Point to the photo of the San on page 17. Have students cover the caption, and turn and talk to a classmate about what is happening in the picture. Ask students to describe the setting, the people, and their actions. Then have students read the caption to self-check their answers.

After you read the text, ask the following questions:

EVALUATIVE—How is the Kalahari different from the Sahara?

- » Possible responses: It gets more rainfall and has more vegetation and wildlife than the Sahara. It’s smaller than the Sahara.

LITERAL—Who are the San? How did they adapt to life in the desert?

- » They are a group of people who live in the Kalahari. They are sometimes called “Bushmen.” They adapted to life in the desert by learning how to find and save water.

INFERENTIAL—Why do you think the San decided to use ostrich eggs to store water?

- » Possible responses: They used ostrich eggs because ostriches are common in their area. The San tested the eggs out to see whether they could hold water and learned that they could. Ostrich eggs are also very large.

Activity Page



AP 2.2

Ask students to take out Hot and Cool Facts About World Deserts (AP 2.2), and have them complete the row about the Kalahari. If time allows, review student answers about the Sahara and Kalahari deserts for accuracy.



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question: “What are the similarities and differences between the Sahara and Kalahari deserts?”
 - » Key points students should cite include: both deserts have scarce rainfall and are home to people, plants, and small and large animals; the Sahara is bigger and drier than the Kalahari, with a patchwork of rocky mountains, salt flats, gravel plains, and sand seas; the Kalahari is sometimes referred to as a “thirstland,” due to its rich assortment of plants and wildlife.
- Choose one of the Core Vocabulary terms (*oasis*, *salt flat*, *radiate*, *game reserve*, or *basin*), and write a sentence using the terms.

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

CHAPTER 3

Australia, a Dry Continent

The Big Question: What strategies have the Aboriginal peoples adopted in order to survive the harsh conditions of desert life?

Primary Focus Objectives

- ✓ Understand the unique land features and water resources of the Australian continent. (RI.6.2)
- ✓ Relate how the Aboriginal peoples' traditional way of life suited the Australian Outback. (RI.6.3)
- ✓ Understand the meaning of the following domain-specific vocabulary: *scrub brush*, *interior*, *riverbed*, *marsupial*, and *nomadic*. (RI.6.4)

What Teachers Need to Know

For background information, download the CKHG Online Resource “Australia, a Dry Continent”:

www.coreknowledge.org/ckhg-online-resources

Materials Needed

Activity Pages



AP 1.1

AP 2.2

- Display copy of World Map (AP 1.1)
- Display and individual student copies of Hot and Cool Facts About World Deserts (AP 2.2)

Core Vocabulary (Student Reader page numbers listed below)

scrub brush, n. small or short bushes and trees (18)

Example: The dingoes could not see the rabbits hiding in the scrub brush.

interior, n. an area far from the coast in a country or continent (20)

Example: Kansas is located in the interior of the United States.

riverbed, n. the ground at the bottom of a river (20)

Example: The fish hid among the plants that grew in the riverbed.

marsupial, n. a type of mammal that carries its young in a pouch (20)

Example: The kangaroo is a well-known marsupial.

Variations: marsupials

nomadic, adj. moving around often in search of food; not settled in one place (23)

Example: The nomadic Plains peoples of North America followed the bison herds every summer.

THE CORE LESSON 35 MIN

Introduce “Australia, a Dry Continent”

5 MIN

Activity Page



AP 1.1

Display World Map (AP 1.1). Remind students that in the previous chapter, they read about deserts located in Africa. Ask students to name the deserts (*Sahara, Kalahari*) and to give one interesting fact about each desert.

Tell students that in this chapter, they will read about deserts in Australia. Have them find Australia on the World Map.

Call students’ attention to the Big Question. Tell students to look for details about Aboriginal ways of life as they read.

Independent Reading of “Australia, a Dry Continent”

30 MIN

Activity Page



AP 2.2

Direct students to read the entire chapter independently and to complete the appropriate sections of Hot and Cool Facts About World Deserts (AP 2.2) as they read the chapter.

Tell students that when they finish reading the chapter, they are to write a response to the Big Question, as well as write a sentence using one of the Core Vocabulary words from the chapter.

SUPPORT—Prior to having students start reading the chapter, write the following words on the board or chart paper, pronounce and then briefly explain each word: *Aboriginal, marsupial, nomadic*. Have students repeat the pronunciation of each word.

SUPPORT—Write the Big Question on the board or chart paper to remind students to provide a written answer once they finish reading the chapter. Also add a reminder about writing a sentence using a Core Vocabulary word.

Note: Guided Reading Supports are included below as an alternative to independent reading, if, in your judgment, some or all students are not yet capable of reading the entire chapter independently while still maintaining a good understanding of what they have read.

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

“Surviving in the Desert,” Pages 18–20

Scaffold understanding as follows:

Read aloud the first paragraph of the section “Surviving in the Desert” on page 18.

CORE VOCABULARY—Stop to explain the meaning of the vocabulary term *scrub brush* when it is encountered in the text. Point out that the word *brush* is both singular and plural, so *scrub brush* is both singular and plural.

SUPPORT—Make sure students understand that the Aboriginal peoples are the original inhabitants of Australia, just as Native Americans were the first inhabitants of North America.

Invite volunteers to read aloud the remainder of the section on pages 18–20.

After volunteers read the text, ask the following questions:

LITERAL—What vegetation is most common in the Australian desert?

» Scrub brush is the most common type of plant.

LITERAL—Who are the Aboriginal peoples?

» They are people who have lived on the Australian continent for at least forty thousand years.

EVALUATIVE—How do frogs help the Aboriginal peoples survive in the desert?

» The frogs are a source of water for the Aboriginal peoples.

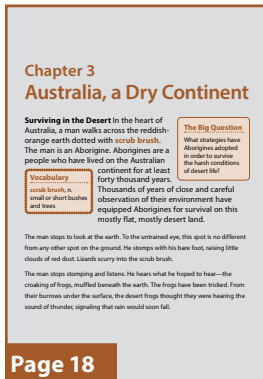
“The Outback,” Pages 20–21

Scaffold understanding as follows:

Have students read “The Outback” on page 20 with a partner. Encourage students to refer to the vocabulary box as they read.

CORE VOCABULARY—Point out the vocabulary terms *interior*, *riverbed*, and *marsupial*, and explain their meanings.

SUPPORT—Draw attention to the images of emus and kangaroos on page 21. Explain that these animals are unique to Australia. They are not found anywhere else, except in captivity in zoos, reserves, or farms.





After students read the text, ask the following questions:

LITERAL—What is the Outback? What kind of land is it?

» The Outback is the interior of Australia. It is mostly desert.

LITERAL—What is a billabong?

» It is a dry streambed that fills with water when it rains.

EVALUATIVE—How are kangaroos and other marsupials adapted for survival in the desert?

» Marsupials require less food than most other mammals. Kangaroos, for example, hop only on their two back legs, which takes less energy than running on four legs.

“A Singing Map,” Pages 22–23



Scaffold understanding as follows:

Invite volunteers to read aloud the section “A Singing Map” on pages 22–23.

CORE VOCABULARY—Stop to explain the vocabulary term *nomadic* when it is encountered in the text.

After volunteers read the text, ask the following questions:

LITERAL—What is “dreamtime”?

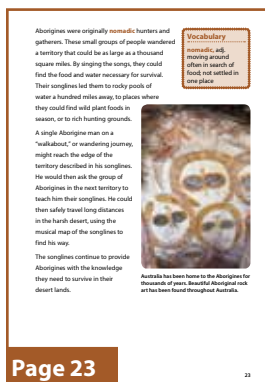
» According to Aboriginal myths, “dreamtime” is when the world was created.

LITERAL—What are songlines?

» Songlines are Aboriginal songs that are used as maps of the land.

EVALUATIVE—How did songlines help the Aboriginal peoples survive in the desert?

» The songs guided the Aboriginal peoples to food and water.



Activity Page



AP 2.2

Note: If students have been reading the chapter independently, call the whole class back together to complete Hot and Cool Facts About World Deserts (AP 2.2) and Check for Understanding as a group.

Ask students to take out Hot and Cool Facts About World Deserts (AP 2.2), and have them complete the row about Australia. If time allows, review student answers for accuracy.



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question: “What strategies have the Aboriginal peoples adopted in order to survive the harsh conditions of desert life?”
 - » Key points students should cite include: the Aboriginal peoples have lived in the Australian desert for thousands of years; they get water from rain and from digging up frogs; they use maps called songlines to find their way in the desert and to locate food and water.
- Choose one of the Core Vocabulary terms (*scrub brush*, *interior*, *riverbed*, *marsupial*, or *nomadic*), and write a sentence using the term.

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

CHAPTER 4

Deserts of Asia

The Big Question: How would you compare the Gobi Desert to the deserts of the Arabian Peninsula?

Primary Focus Objectives

- ✓ Identify the location of the Gobi Desert and the Arabian Peninsula. **(RI.6.7)**
- ✓ Describe the harsh conditions of the Gobi Desert. **(RI.6.2)**
- ✓ Explain the importance of mineral resources to the Arabian Peninsula and to the United States. **(RI.6.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *salt marsh*, *peninsula*, *Bedouin*, and *fossil fuel*. **(RI.6.4)**

What Teachers Need to Know

For background information, download the CKHG Online Resource “Deserts of Asia”:

www.coreknowledge.org/ckhg-online-resources

Materials Needed

Activity Pages



AP 1.1

AP 2.2

AP 4.1

- Display copy of World Map (AP 1.1)
- Display copy of Map of Asia (AP 4.1)
- Display and individual student copies of Hot and Cool Facts About World Deserts (AP 2.2)

Core Vocabulary (Student Reader page numbers listed below)

salt marsh, n. an area of coastal wet land, directly affected by the rise and fall of the tide **(26)**

Example: Crabs are one kind of animal you might find in a salt marsh.

Variations: salt marshes

peninsula, n. a piece of land sticking out into a body of water, so that it is almost surrounded by water **(28)**

Example: Much of the state of Florida is on a peninsula.

Variations: peninsulas

Bedouin, adj. relating to the nomadic Arab tribes of Arabia and North Africa **(28)**

Example: Many Bedouin tribes in the Middle East raise camels, sheep, and goats.

fossil fuel, n. fuel, such as oil, natural gas, and coal, formed in the earth from the remains of living things (29)

Example: Oil is one type of fossil fuel formed in the ground over millions of years.

Variations: fossil fuels

THE CORE LESSON 35 MIN

Introduce “Deserts of Asia”

5 MIN

Activity Page



AP 1.1

Display World Map (AP 1.1). Have students locate the continents they have studied in this unit so far (*Africa and Australia*). Remind students that in the previous chapter, they read about the desert interior of Australia. Ask students to name the area (*the Outback*) and the people who first inhabited that region (Aboriginal peoples).

Tell students that today they will read about deserts in Asia. Have students locate Asia on World Map (AP 1.1). Note the size of the continent. Explain that Asia has many deserts, but in this chapter, students will read only about two of them. Have students use the map to name those two deserts (*the Gobi and the Arabian deserts*).

Call students’ attention to the Big Question. Tell students to look for details about the Gobi and the Arabian Peninsula deserts as they read the chapter.

Guided Reading Supports for “Deserts of Asia”

30 MIN

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

“The Gobi,” “When Dinosaurs Walked the Earth,” and “Forbidding Landscape,” Pages 24–27

Scaffold understanding as follows:

Invite a volunteer to read aloud “The Gobi” on page 24.

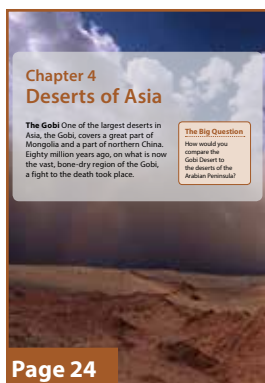
SUPPORT—Direct students’ attention to the image of the Gobi on pages 24–25. Ask students what they notice about the landscape. (*Students will likely comment on the lack of vegetation.*)

SUPPORT—Display Map of Asia (AP 4.1), and ask students to identify and name the countries in which parts of the Gobi Desert are located (*part of Mongolia and part of northern China.*)

Activity Page



AP 4.1



Read aloud the section “When Dinosaurs Walked the Earth” on page 26.

CORE VOCABULARY—Stop to explain the vocabulary term *salt marsh* when it is encountered in the text. Point out that salt marshes are good places to find fossils because tides could have carried bones from other places, which settled in the sand when tides rolled out.

SUPPORT—Draw students’ attention to the photo of dinosaur bones on page 26. Explain to students that Mongolia’s Gobi Desert is one of the world’s richest fossil areas. One team of paleontologists found the bones of forty dinosaurs within a period of about two hours.

Have students read the section “Forbidding Landscape” on page 27 to themselves.

SUPPORT—Draw students’ attention to the picture of the nomad camp in the Gobi Desert on page 27. Ask students to describe the image and then compare it to the image on pages 24–25. Guide students to draw the conclusion that the Gobi Desert has a varied landscape.

After students read the text, ask the following questions:

LITERAL—The Gobi Desert is found in what countries?

» Mongolia and China

INFERENTIAL— Why is the Gobi so dry?

» Mountains surrounding the Gobi block the path of rain clouds, keeping precipitation away.

“The Arabian Peninsula,” Pages 28–29

Scaffold understanding as follows:

Read aloud the first two paragraphs of the section “The Arabian Peninsula” on page 28.

CORE VOCABULARY—Stop to explain the meaning of the vocabulary terms *peninsula* and *Bedouin* when they are encountered in the text.

Note: Students in Core Knowledge schools may recall the term *peninsula* from the Grade 5 unit *Geography of the United States*.

SUPPORT—Call students’ attention to the Arabian Peninsula on World Map (AP 1.1), as well as to the individual countries located on the Arabian Peninsula on Map of Asia (AP 4.1).

Ask students to read the rest of the section on page 29 independently.

SUPPORT—Draw students’ attention to the photo of an oil refinery on page 29, and invite a volunteer to read the caption aloud. Explain the Core Vocabulary term *fossil fuel*, and give students examples that they would understand, such as oil and gasoline.

After students read the text, ask the following questions:

LITERAL—Where is the Arabian Peninsula?

- » It is between the Red Sea and the Persian Gulf, between the continents of Africa and Asia.

LITERAL—What countries are located on the Arabian Peninsula?

- » The Arabian Peninsula includes Yemen, Oman, Qatar, Bahrain, Kuwait, Saudi Arabia, the United Arab Emirates, and parts of Jordan and Iraq.

LITERAL—Describe the landscape on the Arabian Peninsula.

- » It is mostly sand with some areas that are covered in rock and gravel.

EVALUATIVE—What is one way the Arabian Peninsula and the Gobi Desert are similar?

- » Both desert regions are bone-dry.

LITERAL—What resources are available in the Arabian Peninsula?

- » The peninsula is home to resources such as date trees and oil.

Ask students to take out Hot and Cool Facts About World Deserts (AP 2.2), and have them complete the rows about the Gobi Desert and the Arabian Peninsula. If time allows, review student answers for accuracy.

Activity Pages



AP 1.1

AP 4.1

The Arabian Peninsula

The Arabian Peninsula lies between the Red Sea and the Persian Gulf. Its northernmost end connects the continents of Africa and Asia. The Arabian Peninsula is made up of the countries of Yemen, Oman, Qatar, Bahrain, Kuwait, Saudi Arabia, the United Arab Emirates, and parts of Jordan and Iraq.

Parts of the peninsula are covered with rock and gravel, but most of it is a vast expanse of sand. It is the largest sand desert in the world. Sand dunes can reach as high as eight hundred feet and stretch for thirty miles. The land is mostly empty. One large part of the peninsula is called *Rub al-Khali*, meaning Empty Quarter in Arabic. The few oases and scattered palm trees that grow there are called *oases*, or the *Sand*. In the summer, the average daytime temperature in the sand deserts can reach 120°F.

Vocabulary

peninsula, a piece of land extending out into a body of water, but that is almost surrounded by water

Bedouins, nomads, including the nomads, Arab tribes of Arabia and North Africa




Page 28 It can be hundreds of feet high and empty

Not a single significant permanent river runs through this peninsula. Most of the land is bone-dry. Where there is enough moisture for people to live, the most important plant is the date palm tree. Dates are an important food for humans. In addition, fiber from the trees is used for ropes and mats, and the wood is used for building.

Most of the land on the peninsula belongs to Saudi Arabia. When the Saudi Arabian king, Ibn Saud, inherited his kingdom in 1932, he did not know that beneath the sand was enough oil to make him and his family very wealthy. In 1933, officials from the American-owned Standard Oil Company offered the king 35,000 gold coins, plus a percentage of profits from anything found, for the right to drill for oil in his kingdom. After several years of negotiation and drilling, more oil was discovered than anyone had imagined. Today, more than one-third of Earth's known gas and oil lies beneath the desert sands of the Arabian Peninsula. The discovery of oil in the Arabian Peninsula has made some countries there very rich.

Vocabulary

fossil fuel, a fuel, such as oil, natural gas, and coal formed on the earth from the remains of living things



Page 29 The Arabian Peninsula's most precious resource is oil. It is called a fossil fuel.

Activity Page



AP 2.2



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question: “How would you compare the Gobi Desert to the deserts of the Arabian Peninsula?”
 - » Key points students should cite include: The Gobi is full of dinosaur bones; the Arabian Peninsula has a vast supply of oil; both desert regions are hot and dry; the Arabian Peninsula is the world’s largest sand desert; and the Gobi has few sand dunes, is almost surrounded by mountains, and is covered with rock and gravel.
- Choose one of the Core Vocabulary words/terms (*salt marsh*, *peninsula*, *Bedouin*, or *fossil fuel*), and write a sentence using the term.

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

CHAPTER 5

Deserts of North America

The Big Question: If you had to survive in a desert for several days, what would you need?

Primary Focus Objectives

- ✓ Describe the Mojave Desert, the Sonoran Desert, and the Chihuahuan Desert, including the areas that they cover and the characteristics unique to each one. **(RI.6.2)**
- ✓ Understand how deserts have affected travelers and other visitors. **(RI.6.2)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *yucca*, *fault line*, *sea level*, *hemisphere*, and *lava rock*. **(RI.6.4)**

What Teachers Need to Know

For background information, download the CKHG Online Resource “Deserts of North America”:

www.coreknowledge.org/ckhg-online-resources

Materials Needed

Activity Pages



AP 1.1
AP 2.2
AP 5.1

- Display copy of World Map (AP 1.1)
- Display copy of Map of North America (AP 5.1)
- A globe
- Display and individual student copies of Hot and Cool Facts About World Deserts (AP 2.2)
- Internet access
- Photos from the Internet of yucca plants, ladder-backed woodpecker, a screech owl, a sparrow hawk, a coyote, a wild burro, a Gila monster, a Mexican grey wolf, and a mountain lion

Use this link to download the CKHG Online Resources for this unit, where the specific links to the images may be found:

www.coreknowledge.org/ckhg-online-resources

Core Vocabulary (Student Reader page numbers listed below)

yucca, n. a type of plant with pointed leaves, a long stem, and white flowers that grows in dry areas (30)

Example: The flower of the yucca is the state flower of New Mexico.

fault line, n. a crack or split in Earth's crust along which movement takes place (32)

Example: The San Andreas Fault is a major fault line in California.

Variations: fault lines

sea level, n. land that is the same elevation as the surface of the sea or ocean (32)

Example: Land at sea level is often at risk of flooding during a hurricane.

Variations: sea levels

hemisphere, n. either of two halves of Earth (32)

Example: The United States is in the Western Hemisphere.

Variations: hemispheres

lava rock, n. rock formed by magma, or melted rock, that has reached Earth's surface and cooled (32)

Example: Scientists study lava rocks to learn more about volcanoes.

Variations: lava rocks

THE CORE LESSON 35 MIN

Introduce “Deserts of North America”

5 MIN

Activity Page



AP 1.1

Display World Map (AP 1.1). Remind students that in the last chapter, they read about the Gobi Desert and the deserts of the Arabian Peninsula. Have students locate these deserts on the World Map and identify the continent where the deserts are located (*Asia*).

Tell students that in this chapter, they will learn about three deserts in North America. Have students locate North America on the World Map and identify the area of the continent where these deserts are located (*southwestern United States and northwestern Mexico*).

Call students' attention to the Big Question. Have students look for details about surviving in the desert as they read.

Guided Reading Supports for “Deserts of North America”

30 MIN

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

"Mojave Desert," Pages 30–32

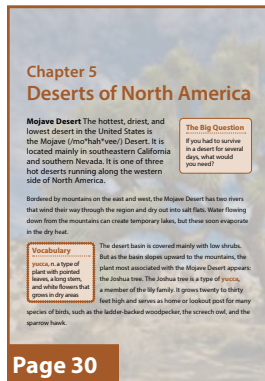
Scaffold understanding as follows:

Read aloud the first three paragraphs of the section "Mojave Desert" on page 30.

Activity Page



AP 5.1



SUPPORT—Display Map of North America (AP 5.1), identifying the location of the Mojave Desert as well as the states in which it is located.

» *(The Mojave runs along the western side of North America, mainly in southeastern California and southern Nevada but also in southwestern Utah and northwestern Arizona.)*

CORE VOCABULARY—Stop to explain the vocabulary term *yucca* when it is encountered in the text, and display photos of yucca plants found on the Internet.

SUPPORT—Explain that some deserts have signature plants. These are plants that grow only in one region and are a sure sign that you are within the boundaries of that region. Direct attention to the photo of the Joshua tree on pages 30–31, and ask students to describe what they see.

SUPPORT—Display Internet photos of the birds described in the third paragraph: ladder-backed woodpecker, screech owl, and sparrow hawk. Explain that the American sparrow hawk is sometimes called a kestrel.

Invite volunteers to read aloud the remaining two paragraphs of the section on page 32.

CORE VOCABULARY—Stop to explain the Core Vocabulary terms *fault line*, *sea level*, and *hemisphere* when they are encountered in the text. Explain that movement along a fault line causes an earthquake.

Note: Students in Core Knowledge schools may recall the terms *sea level* and *hemisphere* from their Grade 4 study of maps.

SUPPORT—Note that *hemisphere* is capitalized when it refers to a specific hemisphere, such as the Western Hemisphere. Using a globe, review with students each of Earth's hemispheres: Eastern, Western, Northern, and Southern. Have them identify the hemispheres in which the United States is located (*Western and Northern*).

After students read the text, ask the following questions:

LITERAL—Where is the Mojave Desert?

» The Mojave Desert is mainly in southeastern California and southern Nevada.

LITERAL—What plant is most associated with the Mojave?

» A type of yucca called a Joshua tree is most associated with this desert.

LITERAL—What is Death Valley?

- » It is a national park and the most famous region of the Mojave Desert. It has the lowest elevation in the Western Hemisphere and is the driest place in the United States. It is also where the all-time high temperature was recorded.

Activity Page



AP 2.2

Ask students to take out Hot and Cool Facts About World Deserts (AP 2.2) and record information about the Mojave Desert.

“The Sonoran Desert,” Pages 32–34

Scaffold understanding as follows:

Activity Page



AP 5.1

SUPPORT—Display Map of North America (AP 5.1), identifying the location of the Sonoran Desert as well as the countries and states in which it is located.

Invite volunteers to read aloud the first two paragraphs of the section “The Sonoran Desert” on page 32.

CORE VOCABULARY—Explain the meaning of the vocabulary term *lava rock* when it is encountered in the text. Note that lava rocks are also referred to as volcanic rocks.

Note: Students in Core Knowledge schools may recall the word *lava* from their Grade 4 study of *World Mountains*.

SUPPORT—Draw students’ attention to the image of the Sonoran Desert on page 33. Invite a volunteer to read the caption aloud.

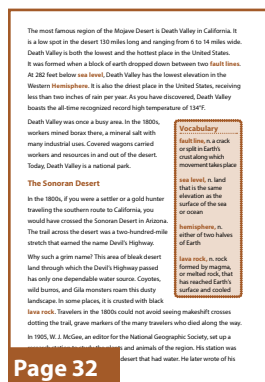
SUPPORT—Display the Internet photos of the animals described in the second paragraph: coyote, wild burro, and Gila monster.

Note: Students in Core Knowledge schools may recall learning about coyotes in the Grade 5 unit, *Native Americans: Cultures and Conflicts*.

Have students read the remainder of the section on pages 32–34 silently or with a partner.

SUPPORT—Note that the ocotillo is also called the candelabra cactus. Ask students if they know what a candelabra is. (*a large, branched candlestick or holder for several candles*)

SUPPORT—Draw attention to the photos of the cacti and the great horned owl on page 34. Display Internet photos of the other animals (Mexican grey wolf and mountain lion) mentioned in the same paragraph.





Activity Page



AP 2.2

After students read the text, ask the following questions:

LITERAL—Where is the Sonoran Desert?

» It is in parts of Arizona, California, and northwestern Mexico.

LITERAL—What is the Devil's Highway?

» It is a two-hundred mile trail through the desert. It did not have dependable water, and many travelers died along the trail in the 1800s.

EVALUATIVE—How is the western part of the Sonoran Desert different from the eastern part?

» The eastern part gets more rain.

Ask students to take out Hot and Cool Facts About World Deserts (AP 2.2) and record information about the Sonoran Desert.

"The Chihuahuan Desert," Page 35

Scaffold understanding as follows:

Have students read "The Chihuahuan Desert" on page 35 independently.

Activity Pages



AP 2.2

AP 5.1

SUPPORT—Display Map of North America (AP 5.1), identifying the location of the Chihuahuan Desert as well as the countries and states in which it is located.

SUPPORT—Pronounce *Chihuahuan* slowly, and ask students to repeat it with you. Explain that the desert is named after the state of Chihuahua, Mexico, where a large portion of the desert lies.

After students read the text, ask the following questions:

LITERAL—Where is the Chihuahuan Desert located?

» It is to the south and east of the Sonoran Desert, stretching into New Mexico, West Texas, and parts of Mexico.

LITERAL—What is one unique feature of the Chihuahuan Desert?

» One unique feature is the white sand dunes in New Mexico.

Ask students to take out Hot and Cool Facts About World Deserts (AP 2.2) and record information about the Chihuahuan Desert. If time allows, review student answers for accuracy.





CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question: “If you had to survive in a desert for several days, what would you need?”
 - » Key points students should cite include: your own source of water, or knowing where water sources can be found; awareness of where flash floods can occur; knowledge of the plants and animals of the area that can be used as a source of food, if desperate; and shade from the sun.
- Choose one of the Core Vocabulary terms (*yucca*, *fault line*, *sea level*, *hemisphere*, or *lava rock*), and write a sentence using the term.

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

CHAPTER 6

Deserts of South America

The Big Question: What are the key features of the Patagonia Desert and the Atacama Desert?

Primary Focus Objectives

- ✓ Describe the vegetation, wildlife, and topographical features of the Patagonian and Atacama deserts. **(RI.6.2)**
- ✓ Understand the effect of European explorers on Patagonia and its native inhabitants. **(RI.6.3)**
- ✓ Understand the meaning of the following domain-specific vocabulary: *tableland*, *basalt*, *terrain*, and *observatory*. **(RI.6.4)**

What Teachers Need to Know

For background information, download the CKHG Online Resource “Deserts of South America”:

www.coreknowledge.org/ckhg-online-resources

Materials Needed

Activity Pages



AP 1.1
AP 2.2
AP 6.1

- Display copy of World Map (AP 1.1)
- Display copy of Map of South America (6.1)
- Display and individual student copies of Hot and Cool Facts About World Deserts (AP 2.2)

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

tableland, n. a wide, flat area of land, often higher than surrounding land; a plateau **(38)**

Example: The fort was built on the flat top of the tableland.

Variations: tablelands

basalt, n. dark gray or black volcanic rock that looks like glass **(38)**

Example: They found a bed of basalt at the base of the volcano.

Variations: basaltic

terrain, n. the landforms of a piece of land (41)

Example: The hikers had to turn around due to the steep terrain.

observatory, n. a building from which scientists watch and study the sky (42)

Example: The class went on a field trip to the observatory to learn about the upcoming solar eclipse.

Variations: observatories

THE CORE LESSON 35 MIN

Introduce “Deserts of South America”

5 MIN

Activity Pages



AP 1.1

AP 6.1

Display World Map (AP 1.1). Have students locate North America and the deserts they studied in Chapter 5. Ask them to name each of the deserts and provide interesting facts about them.

Have students locate South America on the map. Explain that in this chapter, they will read about two deserts on the South American continent. Have students use the map to name these two deserts (*Patagonia and Atacama*).

Display Map of South America (AP 6.1), locate the Patagonia and Atacama deserts, and ask students to name the countries that include parts of each desert, as well as any other geographical features defining the boundaries of each desert. (*Patagonia: southern Argentina, bordered by the Andes Mountains to the west, the Atlantic Ocean to the east, the Rio Colorado to the north, and Tierra del Fuego to the south; Atacama: Peru, northern Chile; bordered by the Pacific Ocean on the west and Andes Mountains on the east.*)

Call students' attention to the Big Question. Tell students to look for the most important features of each desert.

Independent Reading of “Deserts of South America”

30 MIN

Activity Page



AP 2.2

Direct students to read the entire chapter independently and to complete the appropriate sections of Hot and Cool Facts About World Deserts (AP 2.2) as they read the chapter.

Tell students that when they finish reading the chapter, they are to write a response to the Big Question, as well as write a sentence using one of the Core Vocabulary words from the chapter.

SUPPORT—Prior to having students start reading the chapter, write the following words on the board or chart paper, pronounce, and then briefly explain each word: *Patagonia, Atacama, Tierra del Fuego, Tehuelche, guanaco, rhea, bola, terrain, observatories*. Have students repeat the pronunciation of each word.

SUPPORT—Write the Big Question on the board or chart paper to remind students to provide a written answer once they finish reading the chapter. Also add a reminder about writing a sentence using a Core Vocabulary word.

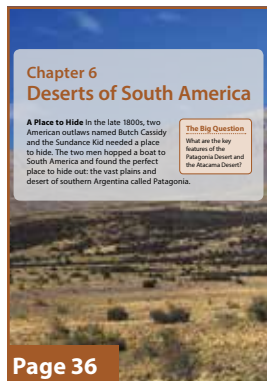
Note: Guided Reading Supports are included below as an alternative to independent reading, if, in your judgment, some or all students are not yet capable of reading the entire chapter independently while still maintaining a good understanding of what they have read.

Guided Reading Supports for “Deserts of South America”

30 MIN

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

“A Place to Hide,” Pages 36–38



Scaffold understanding as follows:

Read aloud the section “A Place to Hide” on pages 36–38.

SUPPORT—Point out the name “Rio Colorado” in the text. Explain that *rio* is the Spanish word for river. Rio Colorado means Colorado River.

SUPPORT—Tell students that *Tierra del Fuego* is Spanish for Land of Fire. European explorers gave the island this name because of the many large bonfires kept by the Native Americans who lived there.

SUPPORT—Draw attention to the image of Patagonia on pages 36–37. Ask students to describe what they see.

After you read the text, ask the following questions:

LITERAL—Where is Patagonia located?

» It is in southern Argentina.

LITERAL—What landforms and waterways border Patagonia?

» Patagonia is bordered by the Andes Mountains to the west, the Atlantic Ocean to the east, the Rio Colorado to the north, and Tierra del Fuego to the south.



“Patagonia,” Pages 38–39

Scaffold understanding as follows:

Have students read the section “Patagonia” on pages 38–39 independently. Encourage them to refer to the vocabulary box on page 38 as they read.

They set up a cattle ranch for a few years on the plains of Patagonia, which reminded them of the U.S. states of Wyoming and Montana. But the two winters never could settle down. After a few years in Patagonia, they wandered north and were killed in a shootout with soldiers in Bolivia.

Patagonia's plains and desert are in the southern part of Argentina. This area of land is bordered on the west by the rising Andes Mountains and on the east by the Atlantic Ocean. Cliffs line almost the entire length of its coast. In the south, the cliffs can be as high as 150 feet.

Patagonia's northern border is the Rio Colorado. From there, the region stretches south 1,200 miles to the island of Tierra del Fuego (tee-ear'ah-foe-ah) / foy-ah'foe) at the tip of South America.

Patagonia

Much of Patagonia is a semiarid area of desert. Cattle and sheep graze on short grasses and shrubs. Rainfall averages between four and eight inches a year, but the dry winds evaporate most of the moisture, so that the entire region is almost completely without trees. Rivers flow down from the Andes toward the ocean, cutting deep canyons on the **tableland**. However, as these rivers cross the dry region, they gradually become smaller and smaller. Only a few of them make it all the way to the Atlantic.

The surface of the land is made up of gravel, rock, and, in some places, **basalt**—a result of old volcanoes in the region. The basalt flats often have hollows that contain shallow lakes.

Patagonia is in the Southern Hemisphere, so the winter months are June through September. The coldest month is July, when temperatures can drop well below freezing. Summer temperatures are in the 50s and 60s.

Vocabulary

tableland, n. a wide, flat area of land, often higher than surrounding land; a plateau

basalt, n. a dark gray or black volcanic rock that looks like glass

Page 38

CORE VOCABULARY—Explain the meanings of the vocabulary terms *tableland* and *basalt*.

SUPPORT—Review the last paragraph in the section. Make sure students understand that the seasons in the Southern Hemisphere are opposite to what they are in the Northern Hemisphere.

After students read the text, ask the following questions:

LITERAL—Describe the landscape of Patagonia.

- » It has short grasses and shrubs. It has canyons formed by rivers. The land has a lot of gravel and rocks.

INFERENTIAL—Why is basalt so common in Patagonia?

- » It comes from old volcanoes in the area.

“Big Feet, the Guanaco, and the Rhea,” Pages 39–41

Scaffold understanding as follows:

Read aloud the first paragraph of the section “Big Feet, the Guanaco, and the Rhea” on page 39.

SUPPORT—Call attention to the pronunciation keys for *Patagones* and *Tehuelche*. Say each word aloud, and then have students repeat the word with you.

Have students read the remainder of the section on page 40 independently or with a partner.

SUPPORT—Call attention to the pronunciation key for *guanaco*. Say the word aloud, and then have students repeat the word with you.

SUPPORT—Draw attention to the photos of the guanaco and the rhea on pages 40–41. Use the images to identify each animal’s defining features, as described in the text. Note the similarity in appearance between the South American rhea and the Australian emu. Explain that both birds are flightless and resemble the ostrich.

SUPPORT—Draw attention to the photo of the Argentinian cowboy on page 41. Point out the bola he is swinging. Remind students that the bola was a weapon used for hunting.

After students read the text, ask the following questions:

LITERAL—Who are the Tehuelche?

- » They are the native people of Patagonia.



The Patagonia Desert, with its short grasses and shrubs, is suitable for grazing animals.

constantly in Patagonia, down from the Andes Mountains eastward toward the Atlantic Ocean.

Big Feet, the Guanaco, and the Rhea

In 1520, Ferdinand Magellan’s expedition to sail around the world stopped on the shores of what is now Argentina. According to legend, the man who recorded the events of the expedition saw huge footprints in the snow. He called the people who made those prints *Patagones* (pah-tah-goh’nes). Spanish for big feet. The land thus earned the name Patagonia. The people who made the footprints in the snow were the Tehuelche (teh-eh-wel’chee) people. Stories spread throughout Europe of a gigantic race of incredibly strong people who lived in what is now Patagonia. The truth is that the Tehuelche were very large people, but not so large that their feet were huge. This accounted for their large footprints. They were generally tall and strong. Europeans imagined them to be.

Page 39

When the Spanish came to Patagonia in the 1500s, they brought horses with them. As happened in North America, horses escaped and were captured, tamed, and bred by the indigenous people. Not much is known about the Tehuelche before the horse was introduced. But with the horse, the Tehuelche took to the flat, semiarid land of Patagonia, being much like the Native Americans of the Great Plains of North America. But the Tehuelche did not hunt buffalo. They hunted guanaco and rhea.

The guanaco (gwah’nah’kah), which is related to the camel, looks like a small camel without a hump. It is about four feet tall at the shoulder, with long legs and reddish brown hair. The Tehuelche hunted guanaco on horseback, using bows and arrows and a weapon called a bola. A bola is made from two or three strands of rope with a weight tied at each end. The Tehuelche threw their bolas at the legs of animals, causing them to fall when their legs became entangled. The Tehuelche also hunted rhea, a flightless bird similar to the ostrich. The rhea is about five feet tall and weighs about fifty pounds.



Page 40



LITERAL—How did contact with European explorers change the life of the Tehuelche?

- » Contact with European explorers brought the horse into Tehuelche culture. The Tehuelche became hunters on horseback, like the Plains peoples of North America.

“The Atacama Desert,” Pages 41–43

Scaffold understanding as follows:

Invite volunteers to read aloud “The Atacama Desert” on pages 41–43.

CORE VOCABULARY—Pause to explain the vocabulary terms *terrain* and *observatory* when they are encountered in the text. Point out that the base of the word *observatory* is *observe*, which means to watch. An observatory is a place where people watch the sky.

SUPPORT—Reread the second paragraph of the section. Ask students to recall the meaning of the Core Vocabulary term *climatologist* from Chapter 1 (*a scientist who studies weather patterns over time*).

SUPPORT—Draw students’ attention to the photo at the bottom of pages 42–43. Invite a volunteer to read the caption aloud. Ask students to describe the terrain shown in the image.

After volunteers read the text, ask the following questions:

LITERAL—Where is the Atacama Desert located?

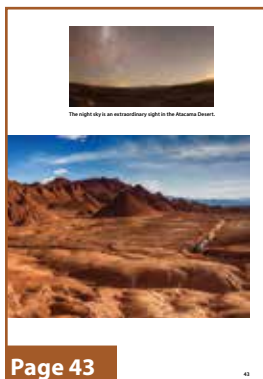
- » It is located on the western coast of South America, between the Pacific Ocean and the Andes Mountains, from southern Peru into northern Chile.

LITERAL—According to climatologists, what is special about the Atacama Desert?

- » It is the oldest and the driest desert on Earth.

LITERAL—What does NASA use the Atacama Desert for? Why?

- » NASA uses it to test equipment that could be sent to Mars because of the desert’s unique terrain.



LITERAL—What landforms and other features are found in the Atacama Desert?

- » The desert has stony landscapes, salt lakes, canyons, lava rock, and dunes. It has some cacti and grasses, but otherwise not very much grows there.

Activity Page



AP 2.2

Ask students to take out Hot and Cool Facts About World Deserts (AP 2.2) and fill in information about the deserts of South America. If time allows, check students' answers for accuracy.



CHECK FOR UNDERSTANDING 10 MIN

Ask students to:

- Write a short answer to the Big Question: “What are the key features of the Patagonia Desert and the Atacama Desert?”
 - » Key points students should cite include: The Patagonia is a semiarid desert; most of it is on a large, treeless tableland; it does have short grasses and shrubs, which make it suitable for raising cattle and sheep; and its surface is covered in gravel, rock, and basalt. The Atacama is quite dry with very little vegetation; and it consists of stony landscapes, salt lakes, canyons, lava rock, and some dunes.
- Choose one of the Core Vocabulary words (*tableland*, *basalt*, *terrain*, or *observatory*), and write a sentence using the word.

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

Additional Activities

World Deserts Review: Where Am I? (RI.6.1)

45 MIN

Activity Page



AP 6.3

Materials Needed: teacher copy of World Deserts Review: Where Am I? (AP 6.3); 22 index cards or sentence strips for each team; dark-colored markers for each team; a board or chart paper for scorekeeping

Note: If you have small whiteboards and dry-erase markers, teams can use those instead of the cards or strips.

Review the information in the unit by conducting a team quiz game with the class. Begin by organizing the class into teams. The teams can be arranged by table, by row, or any other system conducive to your classroom set-up.

Give each team a set of 22 index cards or sentence strips and a dark-colored marker. (**Note:** The marker needs to be dark enough for you to see student writing from across the room.) Have each team assign one member to be the scribe. The scribe's job is to write the team's answers on the cards or strips.

Explain that you will read the class a series of statements about world deserts. For each statement, you will give teams 45 seconds to confer among themselves to decide which desert is being described. The scribe will write the answer and hold it up for you to see. You will then survey the answers from each group and record one point for each team that displays the correct answer.

Once the class understands the rules of the game, use World Deserts Review: Where Am I? (AP 6.3) to read the descriptions. The team with the most points (i.e., the most correct answers) at the end of the game wins. You may wish to award a prize to the winning team, such as being the first out the door for recess or lunch.

Planet Earth: Deserts (RI.6.2)

50 MIN

Materials Needed: Internet access



Background for Teachers: Before beginning this activity, preview the video *Planet Earth* "Episode 5: Deserts" to familiarize yourself with its content. Use this link to download the CKHG Online Resources for this unit, where the specific link for the video may be found:

www.coreknowledge.org/ckhg-online-resources

Prepare students for viewing the video by telling them they are going to watch an episode from a series of award-winning nature videos produced by the BBC, the British Broadcasting Corporation. Show the video to the class.

After students have watched the video, lead a discussion based on the following ideas or questions:

- What makes the Gobi Desert so harsh? (*extreme temperature changes, lack of water, any water there evaporates too quickly, due to the sun*)
- Describe sand storms and how animals have adapted because of them. (*Strong winds cause sand to move around, which reduces visibility, can last for days, and can be blown high into the sky; reptiles have scales which keep them from being hurt in sand storms.*)
- What is the one constant presence in all deserts? (*the sun*)
- How do kangaroos get through the hottest part of the day? (*by licking their forearms so the saliva can evaporate and cool their skin, by staying in shade, by digging under the top soil to cooler soil*)

- What role does fog play in the Atacama? Why does it form there? (*The ocean current along the land produces fog, wind blows the fog inland, fog condenses and water drops onto the vegetation.*)
- How do the plants of the Sonoran Desert help the animals of the Sonoran Desert? (*The saguaro is home to many birds, and its flower is food for bats.*)
- How do elephants survive in the harsh deserts of Africa? (*They travel long distances, as far as fifty miles a day, to find food; they eat the roots of grasses; they fill up on water in water holes as much as possible.*)
- What phenomenon happens when Death Valley receives much needed rain? (*Seeds that have been lying dormant for years sprout, vegetation flourishes, and animals make the most of the food and water available.*)

Then ask students what the idea that one abundance produces another abundance means, and how it relates to the world's deserts. Guide students to understand that deserts lack important things, such as plentiful food and water, and this lack is what makes deserts so harsh. An abundance of water will cause an abundance of vegetation, and an abundance of animals (refer to the section in the video on locusts). Explain that there is a definite cause/effect relationship in the desert, which supports the idea that one abundance will definitely produce another abundance.

Domain Vocabulary: Chapters 1–6 (RI.6.4, L.6.6)

30 MIN

Activity Page



AP 6.2

Materials Needed: Sufficient copies of Domain Vocabulary: Chapters 1–6 (AP 6.2)

Distribute AP 6.2, Domain Vocabulary: Chapters 1–6, and direct students to match the definitions to the vocabulary terms they have learned in their reading about *World Deserts*.

This activity may be assigned for homework.

Teacher Resources

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Unit Assessment: *World Deserts*

A. Circle the letter of the best answer.

1. What is a desert?
 - a) a place that is very hot
 - b) a place that is very sandy
 - c) a place that is very dry
 - d) a place that is very empty
2. What is one thing that both “hot” and “cold” deserts have in common?
 - a) All the land is made of sand.
 - b) Underground water filters impurities from the sand.
 - c) There is a dramatic change between day and night temperatures.
 - d) Both get regular, predictable periods of rainfall.
3. Which kind of plant is well adapted to living in the desert?
 - a) cactus
 - b) moss
 - c) elm tree
 - d) prairie grasses
4. An example of a nocturnal desert animal is a
 - a) lizard.
 - b) kangaroo.
 - c) llama.
 - d) camel.
5. When an animal or plant changes its behavior in reaction to its environment, it
 - a) dies.
 - b) adapts.
 - c) grows.
 - d) regulates.
6. A desert location with plentiful drinking water is called
 - a) an oasis.
 - b) a caravan.
 - c) an avalanche.
 - d) a dune.

7. Which river runs through the Sahara?
 - a) the Amazon
 - b) Rio Colorado
 - c) the Nile
 - d) Rio Grande
8. The Sahara is known for
 - a) the large dinosaur fossils that have been discovered there.
 - b) being the only place in the world that the Joshua tree is found.
 - c) having no permanent water sources.
 - d) its extensive salt mines and camel caravans.
9. The Kalahari Desert
 - a) has almost no plant or animal life.
 - b) is a game reserve with a variety of plants and wild animals.
 - c) is located in Asia.
 - d) is where Aboriginal peoples have lived for thousands of years.
10. In what bird's eggshells do the San store water?
 - a) owl
 - b) ostrich
 - c) chicken
 - d) penguin
11. The Aboriginal peoples have survived in Australia because they
 - a) adapted to their environment closely over thousands of years.
 - b) got help from the Europeans who arrived on their land.
 - c) abandoned their traditional ways for more modern ones.
 - d) hunted roadrunners and guanaco.
12. What is the interior, mostly desert, part of Australia called?
 - a) the Empty Quarter
 - b) a tableland
 - c) a billabong
 - d) the Outback
13. An animal with a pouch, such as a kangaroo, is called a
 - a) mammal.
 - b) marsupial.
 - c) rodent.
 - d) carnivore.

- 14.** What are songlines?
- a) the words to the Australian national anthem
 - b) the sounds that ostriches make to warn of danger
 - c) The Aboriginal peoples' maps of their world that they pass on by word of mouth
 - d) roads through the desert that wind whistles through
- 15.** According to myths of the Aboriginal peoples, what was "dreamtime?"
- a) a time to sleep
 - b) a time after time
 - c) a time to dream
 - d) a time before time
- 16.** On what continent is the Gobi Desert?
- a) Europe
 - b) Africa
 - c) South America
 - d) Asia
- 17.** The Gobi is famous for
- a) being so sandy.
 - b) being at a low elevation.
 - c) having so many fossils.
 - d) having so many different animals.
- 18.** The Gobi covers
- a) all of Mongolia.
 - b) most of Mongolia and part of northern China.
 - c) all of southern China.
 - d) Saudi Arabia.
- 19.** The Gobi is surrounded by
- a) mountains.
 - b) oases.
 - c) rivers.
 - d) cliffs.
- 20.** The northernmost end of the Arabian Peninsula connects
- a) North and South America.
 - b) Africa and Asia.
 - c) Asia and Europe.
 - d) Africa and Europe.

- 21.** Climatologists consider this desert the driest place on Earth.
- a)** Atacama
 - b)** Patagonia
 - c)** Sonoran
 - d)** Gobi
- 22.** What important resource lies beneath the desert of Saudi Arabia?
- a)** gold
 - b)** diamonds
 - c)** oil
 - d)** silver
- 23.** Where is the Mojave Desert?
- a)** Argentina
 - b)** Australia
 - c)** Mexico
 - d)** United States
- 24.** Death Valley is in which desert?
- a)** Gobi
 - b)** Sonoran
 - c)** Chihuahuan
 - d)** Mojave
- 25.** Which is *not* true of Death Valley?
- a)** It was formed between two fault lines.
 - b)** It has the lowest elevation in the Western Hemisphere.
 - c)** It boasts the highest recorded temperature in the United States.
 - d)** It has never been a busy area.
- 26.** Which desert extends from Mexico into Texas and New Mexico?
- a)** Patagonia
 - b)** Chihuahuan
 - c)** Gobi
 - d)** Kalahari
- 27.** Where is the Devil's Highway located?
- a)** the Atacama Desert
 - b)** the Mojave Desert
 - c)** the Chihuahuan Desert
 - d)** the Sonoran Desert

- 28.** Patagonia is in which country?
- a)** Brazil
 - b)** Argentina
 - c)** Mexico
 - d)** Cuba
- 29.** Why is winter in Patagonia from June through September?
- a)** Patagonia is on the equator.
 - b)** Patagonia is in the Southern Hemisphere.
 - c)** Patagonia is east of the international date line.
 - d)** The Tehuelche named the seasons this way.
- 30.** As Europeans arrived in Patagonia, they
- a)** introduced horses to the region.
 - b)** contracted many of the diseases of the Tehuelche.
 - c)** were overwhelmed by the abundance of guanaco and rhea.
 - d)** honored their agreements with the inhabitants not to take their land.

B. Match each vocabulary word on the left with its definition on the right. Write the correct letter on each line.

Terms

Definitions

- | | |
|----------------------------------|---|
| _____ 31. precipitation | a) small or short brushes and trees |
| _____ 32. polar | b) a type of plant with pointed leaves, a long stem, and white flowers that grows in the Mojave Desert |
| _____ 33. salt flat | c) locations with little precipitation, but with enough moisture to support the growth of grasses, shrubs, and a few scattered trees |
| _____ 34. terrain | d) water falling to Earth's surface as rain, hail, snow, or sleet |
| _____ 35. scrub brush | e) natural or human processes that turn fertile land into a desert |
| _____ 36. evaporation | f) the landforms of a piece of land |
| _____ 37. climatologist | g) relating to a geographic pole or the area around it |
| _____ 38. desertification | h) the process by which a liquid changes to a vapor or gas |
| _____ 39. yucca | i) an area of land where evaporation has left a layer of salt |
| _____ 40. semiarid | j) a scientist who studies weather patterns over time |

Performance Task: *World Deserts*

Teacher Directions: While many people think of deserts as dry, hot, and desolate, unappealing landscapes, there are people who find deserts beautiful, magical, and special. These people may choose to live in the desert, or spend all their free time in the desert. These people are often called “desert rats.”

Ask students to imagine they are “desert rats” visiting major world deserts and writing a travelogue, or article, about the journey. The article should describe unique features of each desert they visit. Encourage students to use the Student Reader and the table provided to take notes and organize their thoughts. They may also reference their completed activity page Hot and Cool Facts About World Deserts (AP 2.2).

A sample table, completed with possible notes, is provided on the next page to serve as a reference for teachers, should some prompting or scaffolding be needed to help students get started. Individual students are not expected to provide a comparable finished table. Their goal is to list three or more details about each world desert discussed in the Student Reader.

Name	Location (Continent)	Unique Characteristic 1	Unique Characteristic 2	Unique Characteristic 3
The Sahara	Northern Africa	Dramatic change in temperature between day and night	Oases	Animals have learned to live with less water
Kalahari Desert	Southwestern Africa	Rich assortment of plants and animals	Game reserves	San people and ostrich eggs
The Outback	Interior of Australia	The Aboriginal peoples' culture and traditions	Only place emu and kangaroo are found in wild	Importance of pools and billabongs
Gobi Desert	Mongolia and China in Asia	Treasure trove of fossils	Extreme temperatures	nomads
Arabian Peninsula	Between Red Sea and Persian Gulf, in Asia	Large, high sand dunes	Camel-herding Bedouin roam the land	Center of the world's gas and oil industry
Mojave Desert	California, Nevada, N. America	Death Valley and its notable records	The landmark Joshua Tree	Formed by fault lines
Sonoran Desert	California, Arizona, and Mexico, N. America	Devil's Highway	Desert animals such as coyote, wild burro, and Gila monsters	Tale of survival in the desert
Chihuahuan Desert	Northern Mexico and parts of U.S., N. America	White Sands National Monument	Military testing	Can have brief, violent thunderstorms
Patagonia	Southern tip of S. America	Story of Butch Cassidy and Sundance Kid	Magellan and the Tehuelche people	Tehuelche learned to hunt using the horse
Atacama Desert	Parts of Peru and Chile, S. America	The driest place on Earth	Astronomical observatories	NASA uses the landscape to test space vehicles

Performance Task Scoring Rubric

Note: Students should be evaluated on the basis of their travelogues using the rubric.

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

Above Average	Response is accurate, detailed, and persuasive, and five facts are provided for each desert. The references clearly show the writer knows where each desert is located, what its unique features are, and why they would be appealing to a “desert rat.” The writing is clearly articulated and focused, and demonstrates strong understanding of the subjects discussed; a few minor errors may be present.
Average	Response is mostly accurate and somewhat detailed, and four facts are provided for each desert. The references show the writer knows where each desert is and can describe details about each. The writing is focused and demonstrates control of conventions; some minor errors may be present.
Adequate	Response is mostly accurate but lacks detail. The writer can list the deserts and provides three facts for each one. The writing may exhibit issues with organization, focus, and/or control of standard English grammar.
Inadequate	Response is incomplete and demonstrates a minimal understanding of the content in the unit. The student demonstrates incomplete or inaccurate knowledge of the deserts described in the Student Reader. The writing may exhibit major issues with organization, focus, and/or control of standard English grammar.

Name _____

Date _____

Performance Task Activity: *World Deserts*

Imagine you are a “desert rat”—someone who loves deserts and spends a lot of time in them. You have been asked to explore the major deserts of the world and write a travelogue, or an article for a travel magazine, describing the unique features of the deserts you visit.

Use the table on the next page to take notes and organize your thoughts. You may refer to the chapters in *World Deserts*.

[illegible]

Name _____

Date _____

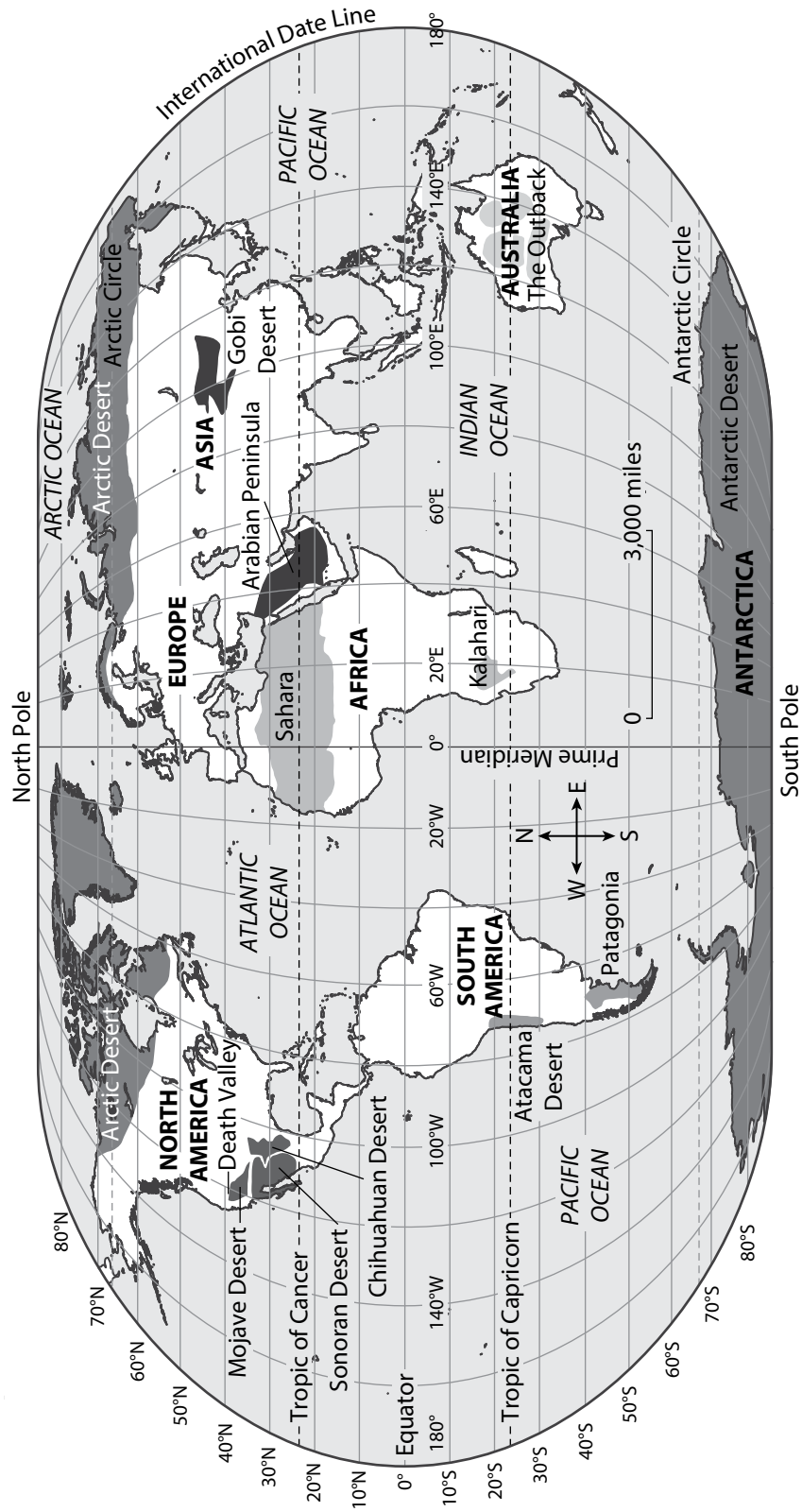
World Deserts Performance Task Notes Table

Use the table below to help organize your thoughts as you refer to *World Deserts*. You do not need to complete the entire table to write your travelogue, but you should try to have three or more interesting details about each desert's unique characteristics.

Name	Location (Continent)	Unique Characteristic 1	Unique Characteristic 2	Unique Characteristic 3
The Sahara	Northern Africa			
Kalahari Desert		Rich assortment of plants and animals		
The Outback			Only place emu and kangaroo are found in wild	
Gobi Desert				Home to nomadic people
Arabian Peninsula				
Mojave Desert				
Sonoran Desert				
Chihuahuan Desert				
Patagonia				
Atacama Desert				

Name _____ Date _____

World Map



Name _____

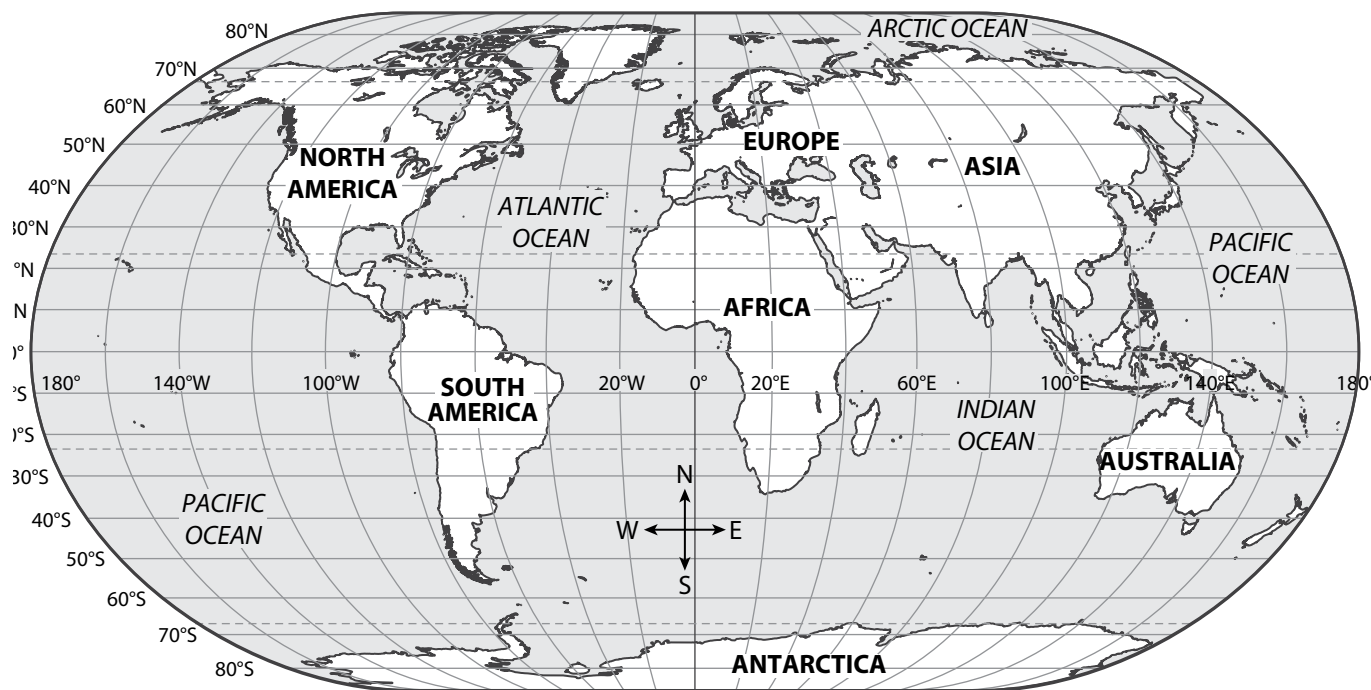
Date _____

Activity Page 1.2

Use with Chapter 1

Imaginary Lines

Study the map. Then complete the items below.



1. The numbers that go across the center of the map from left to right indicate lines of _____.
2. The numbers on the side of the map indicate lines of _____.
3. On the map, label the following:

equator

Arctic Circle

Tropic of Capricorn

North Pole

Antarctic Circle

prime meridian

South Pole

Tropic of Cancer

international date line

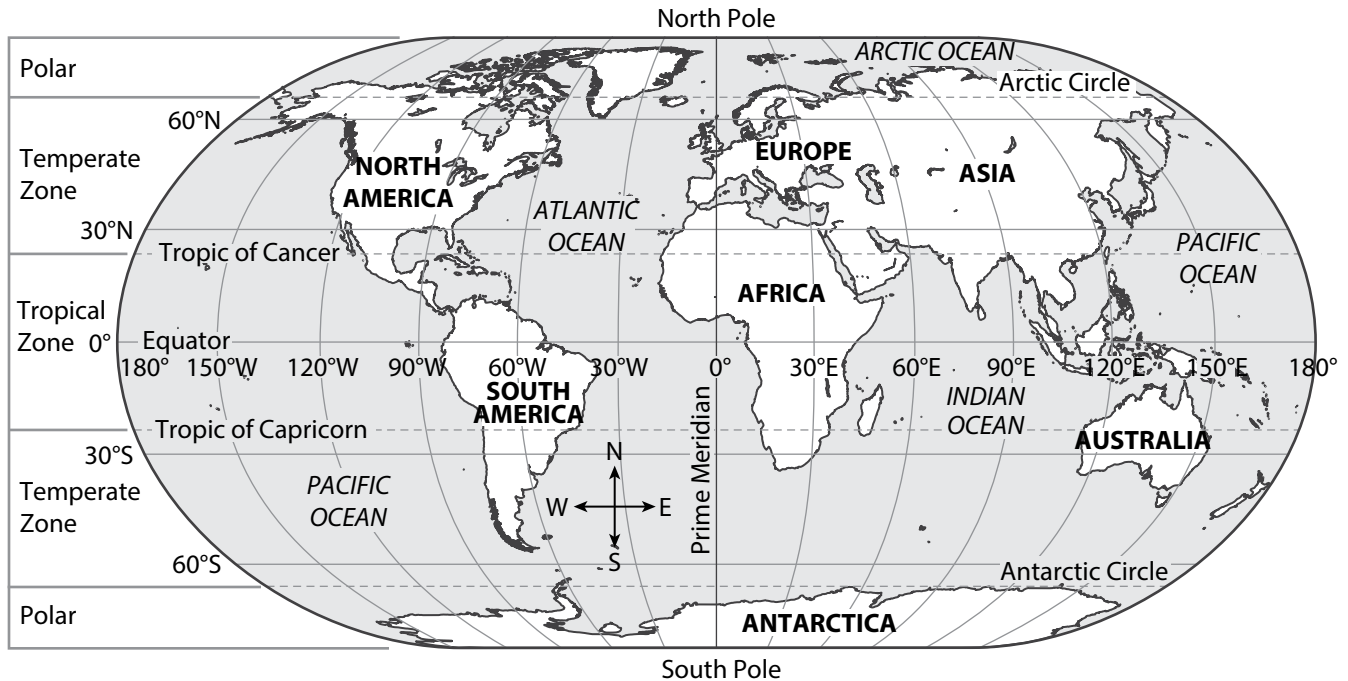
Name _____

Date _____

Activity Page 1.3

Use with Chapter 1

Latitude as Climate Indicator



1. Color the area between the Tropic of Cancer and the Tropic of Capricorn red. This area is known as the _____ zone.
2. Color the area north of the Arctic Circle blue. This area is known as the _____ zone.
3. Color the area south of the Antarctic circle blue. This area is known as the _____ zone.
4. Find the areas between the tropics and the polar (arctic and antarctic) climates. Color these climate areas yellow. These areas are known as the _____ zones.

Name _____

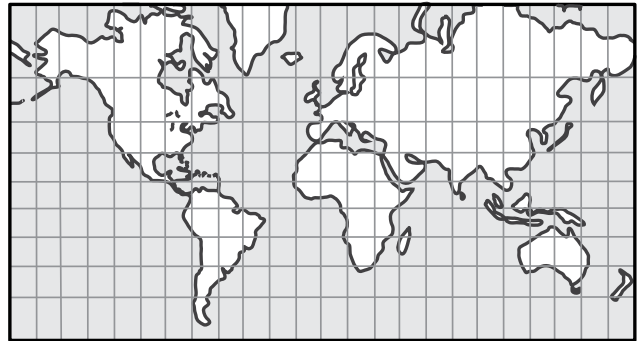
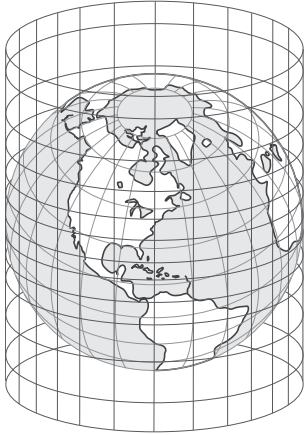
Date _____

Activity Page 1.4

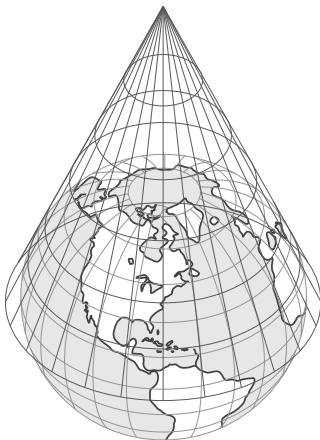
Use with Chapter 1

Three Different Map Projections

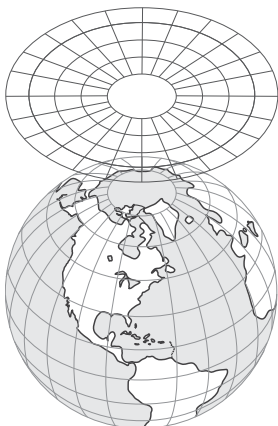
Mercator Projection



Conic Projection



Plane Projection



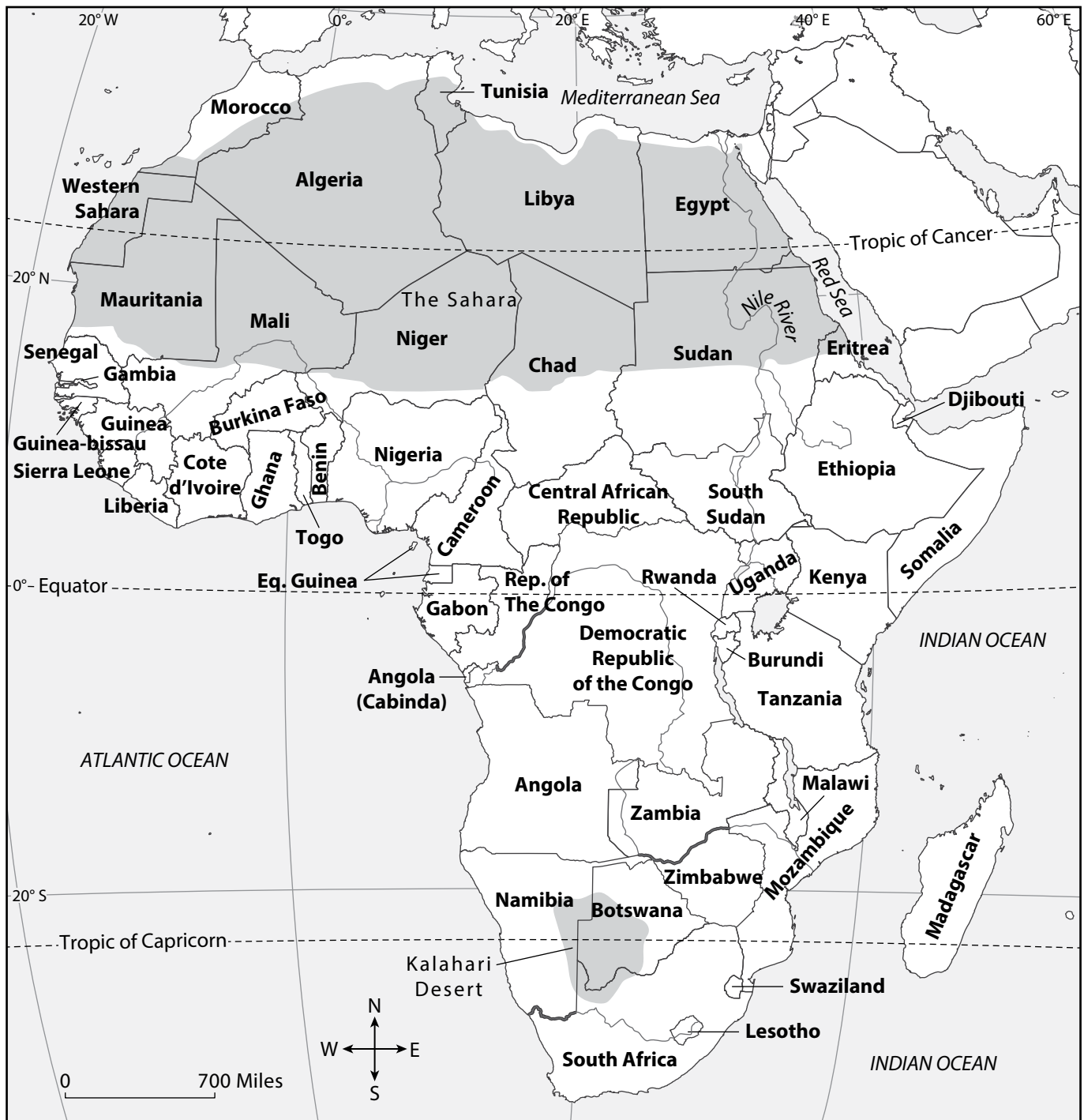
Name _____

Date _____

Activity Page 2.1

Use with Chapter 2

Map of Africa



Name _____ Date _____

Hot and Cool Facts About World Deserts

Desert	Location (Continent)	Topography (Landscape)	Arid/Semiarid	Plants & Animals	People
Sahara					
Kalahari					
The Outback					

Name _____ Date _____

Hot and Cool Facts About World Deserts

Desert	Location (Continent)	Topography (Landscape)	Arid/Semiarid	Plants & Animals	People
Gobi					
Arabian Peninsula					
Mojave					
Sonoran					

Name _____ Date _____

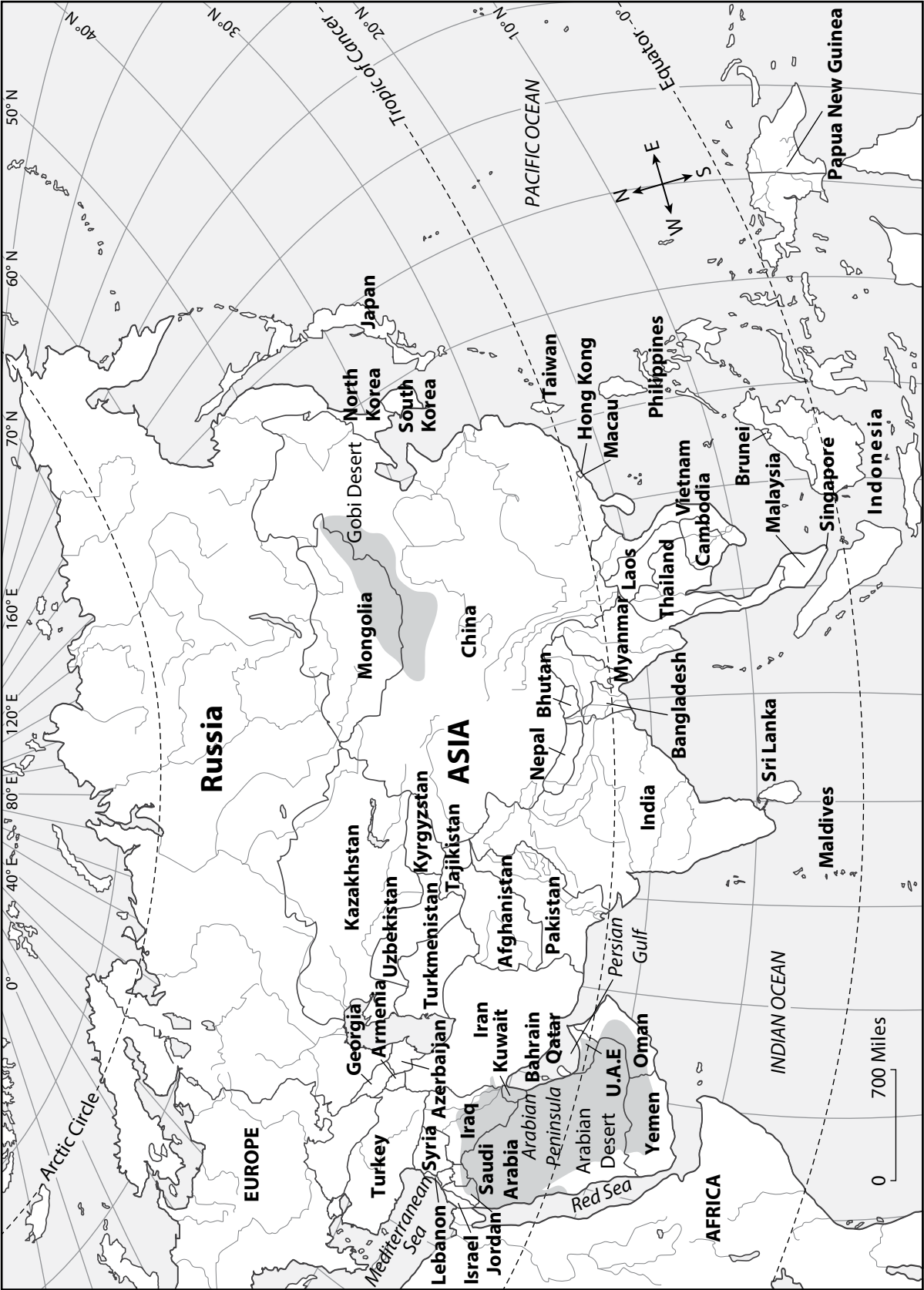
Hot and Cool Facts About World Deserts

Desert	Location (Continent)	Topography (Landscape)	Arid/Semiarid	Plants & Animals	People
Chihuahuan					
Patagonia					
Atacama					

Name _____

Date _____

Map of Asia



Name _____

Date _____

Activity Page 5.1

Use with Chapter 5

Map of North America



Name _____

Date _____

Activity Page 6.1

Use with Chapter 6

Map of South America



Name _____

Date _____

Activity Page 6.2

Use with Chapter 6

Domain Vocabulary: Chapters 1–6

Use the words in the word bank to complete the sentences.

yucca	interior	evaporation	terrain	scrub brush
desertification	Bedouin	polar	precipitation	riverbed
observatory	climatologist	sea level	basalt	lava rock
peninsula	tableland	semiarid	game reserve	salt marsh
radiate	fault line	marsupial	oasis	hemisphere
nomadic	fossil fuel	basin		

- _____ regions typically receive between ten and twenty inches of annual rainfall.
- Much of the state of Florida is surrounded on three sides by water, making it a _____.
- Even in the summer, _____ deserts can get very cold.
- Flooding often occurs in the drainage _____ of the river.
- Oil is just one type of _____ formed in the ground over millions of years.
- The caravan stopped at the _____ so the camels could get a drink of water.
- They found a bed of _____ rock at the base of the volcano.
- Land at _____ is at the same elevation as the ocean.
- The _____ has studied the weather of the Sahara for the past ten years.
- The most well-known _____ is the kangaroo.
- The forecast is calling for _____ today.
- The San Andreas Fault is a major _____ in California.

Name _____

Date _____

Activity Page 6.2 (Continued)

Use with Chapter 6

13. The hikers had to turn around due to the steep _____.
14. Many _____ tribes of Arabia raise camels, sheep, and goats.
15. A place where scientists study the sky is called an _____.
16. Overgrazing arid lands can cause _____.
17. To _____ is to send out.
18. The coyotes could not see the rabbits hiding in the _____.
19. The _____ has sharp leaves and white flowers.
20. A _____ is one half of Earth.
21. A _____ is an area of coastal wet land, directly affected by the rise and fall of the tide.
22. Visiting a _____ is a great idea for people who want to see endangered animals in their natural habitat.
23. Water turning into steam is an example of _____.
24. The _____ of a country is an area far from the coast.
25. Someone who moves around often is considered _____.
26. The ground at the bottom of a river is called the _____.
27. Scientists study _____ to learn more about volcanoes.
28. A _____ is a wide, flat area of land usually higher than the surrounding land.

Name _____

Date _____

Activity Page 6.3

Use with Chapter 6

World Deserts Review: Where Am I?

Use the following questions and answers in a team quiz game to review unit content.

1. This desert sits on a high plateau in Mexico and stretches into New Mexico and Texas in the United States. (*Chihuahuan Desert*)
2. Many dinosaur bones have been uncovered here. (*Gobi Desert*)
3. These areas are considered polar deserts. (*Arctic and Antarctic region*)
4. Many settlers and gold hunters traveled the Devil's Highway here; some did not make it to their destination. (*Sonoran Desert*)
5. NASA used the unique terrain here to test fact-finding equipment that could be sent to Mars. (*Atacama Desert*)
6. The San have a steady supply of water here, due to their innovative use of ostrich eggs. (*Kalahari Desert*)
7. Many camel caravans cross the sand dunes here in search of an oasis. (*Sahara*)
8. The largest sand desert in the world is found here. (*Arabian Peninsula*)
9. The highest temperature in the United States (134°F) was recorded here. (*Death Valley or Mojave Desert*)
10. The dry land here supports animals, such as the kangaroo and the emu, which are not found anywhere else. (*The Outback*)
11. Some of the animals that live here include the antelope, the gazelle, mountain sheep, and the small fennec fox. (*Sahara*)
12. Winter temperatures in these two areas can drop to below –60°F. (*Arctic and Antarctic region*)
13. The ladder-backed woodpecker, the screech owl, and the sparrow hawk all make their home in the yucca found only in this desert. (*Mojave Desert*)
14. Almost completely surrounded by mountains, this land is covered in rock and gravel, and receives very little rain. (*Gobi Desert*)
15. An area consisting mostly of tableland in the southern part of Argentina, bordered by the Andes Mountains and the Atlantic Ocean. (*Patagonia*)
16. The area of this basin in the central part of southern Africa is almost as large as the state of Texas. (*Kalahari Desert*)

Name _____

Date _____

Activity Page 6.3 (Continued)

Use with Chapter 6

- 17.** Many of the countries in this region are rich due to the discovery of oil. (*Arabian Peninsula*)
- 18.** Songlines were used here by Aboriginal peoples to map the land. (*The Outback*)
- 19.** Ferdinand Magellan stopped on the shores of this area during an expedition to sail around the world and named the area after the native people. (*Patagonia*)
- 20.** Most climatologists consider this desert the driest place on Earth. (*Atacama Desert*)
- 21.** The U.S. military uses White Sands National Monument in this desert to tests bombs and missiles. (*Chihuahuan Desert*)
- 22.** Coyotes, wild burros, and Gila monsters roam this dusty landscape. (*Sonoran Desert*)

Answer Key: World Deserts

Unit Assessment

(pages 59–64)

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

B. 31. d 32. g 33. i 34. f 35. a 36. h 37. j 38. e 39. b 40. c

Activity Pages

Imaginary Lines (AP 1.2) (page 71)

1. longitude
2. latitude
3. equator: 0° latitude; North Pole: 90° N latitude; South Pole: 90° S latitude; Arctic Circle: 66.5° N latitude; Antarctic Circle: 66.5° S latitude; Tropic of Cancer: 23.5° N latitude; Tropic of Capricorn; 23.5° S latitude; prime meridian: 0° longitude; international date line: 180° longitude

Latitude as Climate Indicator (AP 1.3) (page 72)

1. tropical
2. polar
3. polar
4. temperate

Hot and Cool Facts About World Deserts (AP 2.2) (pages 75–77)

Desert	Location (Continent)	Topography (Landscape)	Arid/Semiarid	Plants & Animals	People
Sahara	Africa	rocky mountains, salt flats, gravel plains, and sand seas	both—dry interior with semiarid edges	plants with deep roots, camels, antelopes, gazelles, mountain sheep, fennec foxes	nomadic Bedouins; millions in desert margins
Kalahari	Africa	basin	“thirstland” more than desert	wildebeests, lions, antelopes, jackals, elephants, giraffes, zebras, ostriches, small birds, reptiles	San
The Outback	Australia	mostly sand hills with short grasses; sand dunes; billabongs	both, but mostly arid	scrub brush, gum trees, frogs, kangaroos, emus	Aboriginal peoples
Gobi	Asia	arid	covered in rock and gravel, with few sand dunes	mostly scrub brush and grasses; poplar trees, reeds, and flowering shrubs near rare oases and rivers	nomads of Mongolia

Arabian Peninsula	Asia	arid	rock and gravel but mostly sand (world's largest sand desert)	date palm trees	mostly empty but roamed by Bedouins
Mojave	North America	arid	desert basin, salt flats	shrubs, Joshua trees, ladder-backed woodpecker, screech owl, sparrow hawk	
Sonoran	North America	arid	dusty, lava rocks	coyotes, wild burros, Gila monsters, Mexican grey wolf, mountain lion, great horned owl, ocotillo (candelabra) cactus, prickly pear cactus	
Chihuahuan	North America		few sand dunes, white sand, plateau		
Patagonia	South America	semiarid	plains, desert, gravel, rock, basalt, tableland with canyons	cattle, sheep, guanaco, rhea	Tehuelche, Spanish colonists
Atacama	South America	arid (driest place on Earth)	stony landscapes, salt lakes, canyons, lava rock, dunes	cacti, hardy grasses	people live on desert edge; scientists use desert to study sky and test equipment for Mars

Domain Vocabulary: Chapters 1–6 (AP 6.2) (pages 81–82)

- | | | | |
|----------------|---------------------|------------------|---------------|
| 1. semiarid | 9. climatologist | 17. radiate | 25. nomadic |
| 2. peninsula | 10. marsupial | 18. scrub brush | 26. riverbed |
| 3. polar | 11. precipitation | 19. yucca | 27. lava rock |
| 4. basin | 12. fault line | 20. hemisphere | 28. tableland |
| 5. fossil fuel | 13. terrain | 21. salt marsh | |
| 6. oasis | 14. Bedouin | 22. game reserve | |
| 7. basalt | 15. observatory | 23. evaporation | |
| 8. sea level | 16. desertification | 24. interior | |



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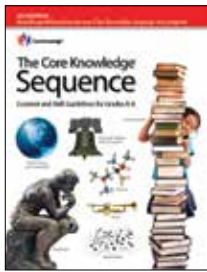
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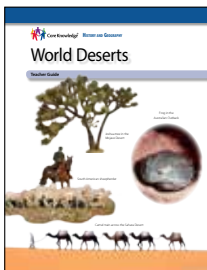
World Deserts

Core Knowledge History and Geography 6



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