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CHAPTER 2

Texas's Place on the Earth

VIEW THE **Texas on Tape** **CHAPTER 2** VIDEO LESSON.

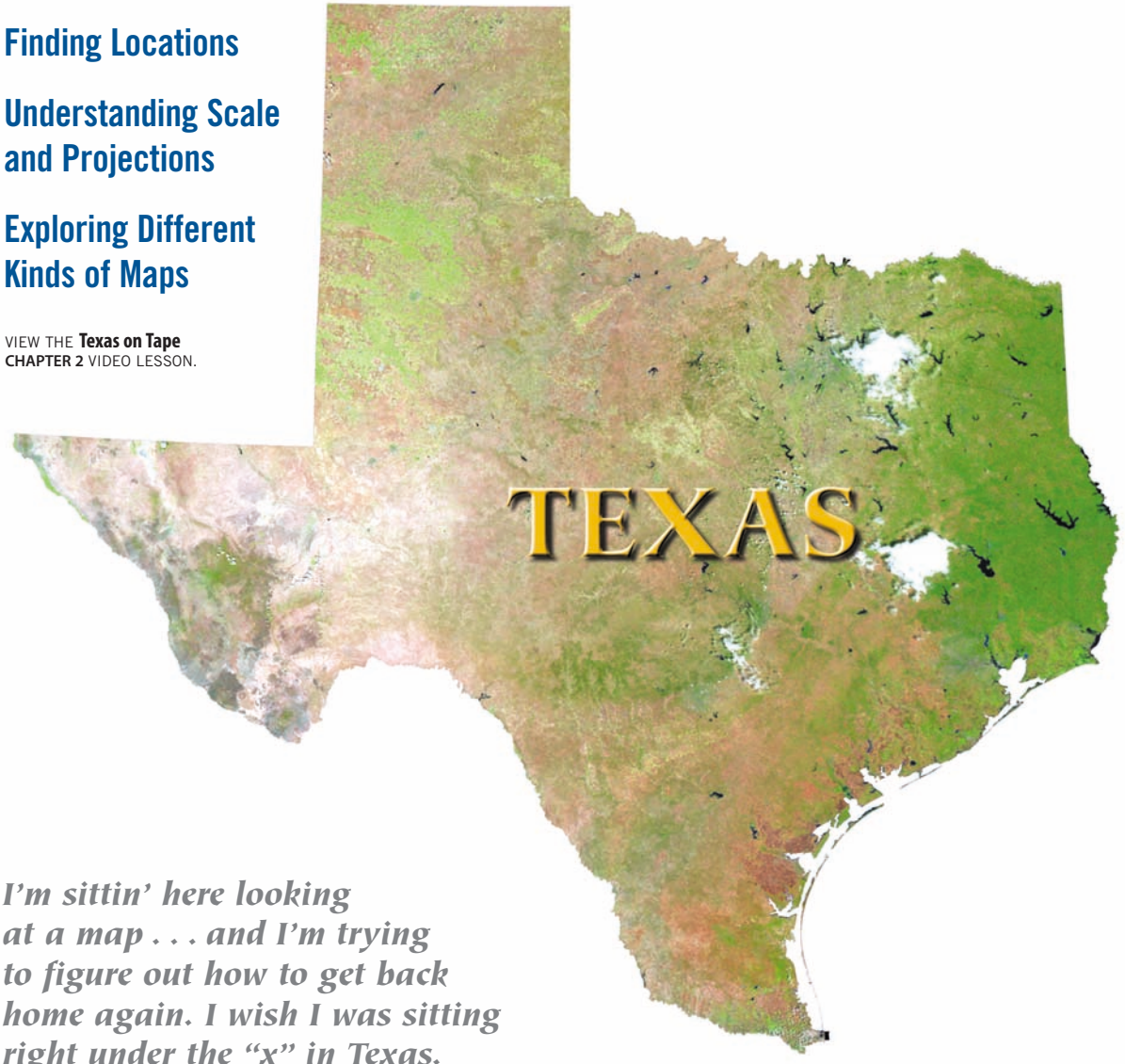

Image of Texas from NASA's Terra spacecraft

I'm sittin' here looking at a map . . . and I'm trying to figure out how to get back home again. I wish I was sitting right under the "x" in Texas.

Texas musician Johnny Gimble

1500 | 1600 | 1700 | 1800 | 1900

- 1520 Alonso Álvarez de Piñeda's crew sketches first Spanish map of Texas
- 1569 Gerardus Mercator invents cylindrical map projection
- 1684 On La Salle expedition, Minet draws first French map of Texas
- 1728 Francisco Álvarez Barreiro draws first detailed map of inland Texas
- 1790s Philip Nolan creates first accurate Anglo American map of Texas
- 1830 Stephen F. Austin maps his settlement based on accurate survey
- 1844 William Hemsley Emory maps West Texas and the Mexican border

SKILLBUILDER Reading Social Studies

Before You Read

Have you ever used a map to find your way to an unfamiliar place? Maps can be used for many purposes. You may be most familiar with street maps. But maps can also show geographical features, such as rivers and mountains, or political divisions, such as countries and states.

Think about

- the types of maps you have seen in a weather forecast
- the symbols, lines, and colors used on weather maps
- how your local weather forecaster uses maps to show trends and make predictions

As You Read

Texas appears on many different maps: as part of the United States, as a part of the Southwest United States, or even by itself. Completing this graphic organizer for Chapter 2 will help you understand and organize the information you will read about maps.

- Copy the chart in your Texas Notebook.
- As you read the chapter, look for the important terms listed in the organizer.
- Complete columns 2 and 3. Summarize in your own words the meaning of each term. Then list an example of each.

Organizing Information

TERM	MEANING	EXAMPLE
latitude (parallels)		
longitude (meridians)		
hemisphere		
scale		
projection		
general-purpose map		
special-purpose map		
legend		

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SECTION 1

Finding Locations

Why It Matters Now

In our increasingly global community, you may need to describe your location to others and find your way to distant places.

TERMS & NAMES

latitude, longitude, parallel, meridian, degree, minute, **hemisphere, equator, prime meridian,** Tropic of Cancer, Tropic of Capricorn, Arctic Circle, Antarctic Circle, solstice

OBJECTIVES

1. Locate specific places of importance on a map of Texas.
2. Interpret information from a map.
3. Infer information from a map.

MAIN IDEA

The world is an enormous place. Finding your way around such a vast landscape would be almost impossible without the aid of maps. Maps can tell you about a place's relative location and its absolute location on a geographic grid.

WHAT *Would You Do?*

Write your response to Interact with History in your Texas Notebook.

INTERACT WITH HISTORY

Imagine that you are piloting the Space Shuttle on a brief mission. At the end of your trip you need to land safely back on the earth. Unfortunately, bad weather is preventing you from landing at Cape Canaveral, Florida. Instead the National Aeronautics and Space Administration (NASA) controllers in Houston have promised to provide you with all the information you will need to reroute to Edwards Air Force Base in California. Considering that the Shuttle will approach the site at tremendous speed, you will need precise directions from the Houston team. Create a list of questions to ask NASA to help pinpoint your exact landing site. Which will be more important in this instance, relative or absolute data? Why?

Providing Useful Directions

In Chapter 1 you read about the difference between relative and absolute location. Relative location pinpoints where something is located in relation to something else. Absolute location identifies exactly where something is located on the earth. But how do you determine whether to locate a place by its relative or absolute location?

First think about why you need the information. Are you giving a friend directions to your house or apartment? If so, you might need to point out specific landmarks, such as buildings, stoplights, or other objects. You might say, "Go south from the school on Tenth Avenue until you get to the church on Maple Street. Turn left on Maple and go nine blocks to the four-way stop. That's First Avenue. My house is number 2420. It's the white house on the corner."

▲ The relative location of Texas can be given by its association to four states, one country, and a body of water. ● **What is the relative location of El Paso?**

These directions provide your friend with the location of your home relative to other places on the earth. You could use the same technique to describe the relative location of your town, your state, or even the continent on which you live. For instance, think about the many different ways you might describe the relative location of Texas. You could use specific rivers to tell where Texas is located—north of the Rio Grande, west of the Sabine River, and south of the Red River. You could say that Texas is in the south-central part of the United States, east of New Mexico, south of Oklahoma, and west of Arkansas and Louisiana. Or you might say that it is just north of Mexico or northwest of the Gulf of Mexico. Each of these descriptions is easy to understand because it tells where Texas is in relation to familiar locations. For this reason relative location is what most people use to give simple directions.

Sextant used in 1840 to survey the Texas boundary along the Sabine River

Finding Places on a Map

Although relative location can be useful for giving some directions, it is not perfect for every situation. Imagine how you might give directions to an island in the middle of an ocean. Because there are no landmarks on the ocean's surface, relative location is of little use. In this case it is better to use absolute location. To pinpoint absolute locations on the earth's surface, geographers use a geographic grid system.

The geographic grid system is a set of imaginary lines that run at right angles to each other. The location indicated by the intersection of the coordinates in the grid is the absolute location. Location north or south on the globe is called **latitude.** East or west location is **longitude.** Latitude is shown by parallels, which are also called lines of latitude. Longitude is indicated by meridians, or lines of longitude.

latitude *the location north or south of the equator*

longitude *the location east or west of the prime meridian*

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The geographic grid system uses special units of measurement called degrees to identify the coordinates. To make measurements even more exact, geographers divide degrees into 60 equal parts called minutes. Each minute, in turn, can be divided into 60 equal parts called seconds. Degrees and minutes are used to show most locations. Seconds are used only when it is necessary to find a very small place, such as a building or a city block. Degrees, minutes, and seconds are identified by symbols, so geographers do not have to write out these words every time. The symbol for degrees is °. The symbol ' represents minutes, and the symbol " stands for seconds.

hemisphere *one half of the earth, divided by the equator into northern and southern halves or by the 0° and 180° meridians into eastern and western halves*

equator *the imaginary line at 0° latitude that divides the earth into a northern half, the Northern Hemisphere, and a southern half, the Southern Hemisphere*

prime meridian *the imaginary line at 0° longitude*

The Earth's Hemispheres

The geographic grid system divides the earth into equal half spheres called **hemispheres.** Latitude is divided at the **equator,** which has the value of 0°. This divides the earth horizontally into the Northern Hemisphere and the Southern Hemisphere. The latitude numbers increase through each hemisphere from the equator to the poles. Each pole has a value of 90°. Since the numbers of the parallels repeat in the Northern and Southern Hemispheres, the letters *N* and *S* are used to tell whether a location is north or south of the equator—for example, 30°N or 30°S. Only latitudes have a letter *N* or *S*.

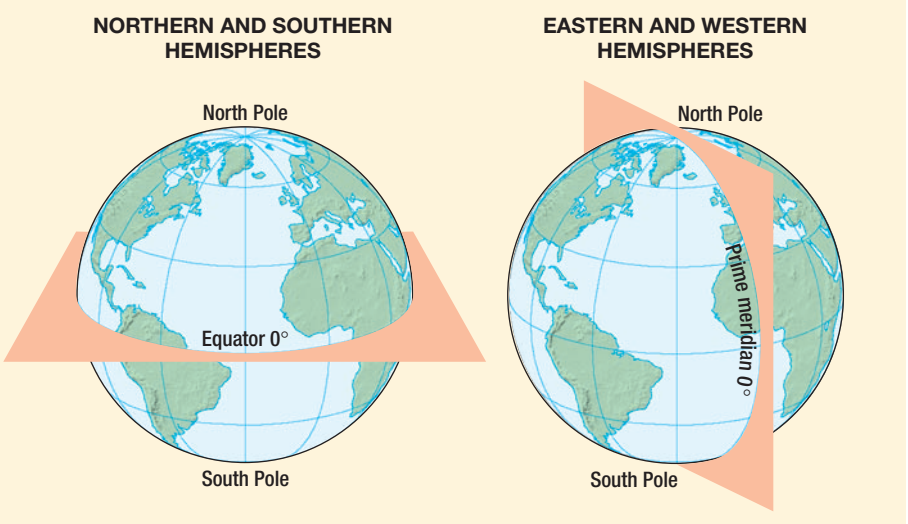
For longitude, the **prime meridian** is assigned the value of 0°. From the prime meridian, longitude increases east and west until the 180° meridian. That line is directly opposite the prime meridian. The 0° and 180° meridians together divide the world into the Eastern and Western Hemispheres. As with latitude, a letter is used to tell in which hemisphere a place is located. The letter *E* indicates a location east of the prime meridian. The letter *W* indicates a location west of that line. Only longitudes have a letter *E* or *W*.

IN THIS LAND OF OURS

LOCATION

The major landmasses of the earth are divided into seven continents. North and South America lie in the Western Hemisphere, and Europe, Africa, Asia, and Australia lie mainly in the Eastern Hemisphere. Antarctica is divided between the Western and Eastern Hemispheres.

Five of the seven continents lie in either the Northern or Southern Hemisphere. The other two—South America and Africa—are in both the Northern and the Southern Hemisphere. ● **On which continent does Texas lie? In which two hemispheres is Texas located?**



▲ Dividing the earth at the equator results in the Northern and Southern Hemispheres. Dividing it at the prime meridian and the 180° meridian results in the Eastern and Western Hemispheres. ● **Is Texas closer to the equator or to the prime meridian?**

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▲ This map shows the degrees of latitude and longitude for Texas and its major cities.
● **Which cities are located at 30°18'N, 97°42'W and 32°51'N, 96°51'W?**

The map shows where Texas is located in terms of latitude and longitude. At what degree of longitude is the westernmost edge of Texas? the easternmost? At what degree of latitude is the northernmost edge? the southernmost?

Special Parallels

On a Texas map, parallels and meridians often are drawn every 1, 2, or 3 degrees. On a world map or a globe, parallels and meridians are usually drawn every 15 or 20 degrees. In addition, four parallels are drawn in special places. Two special parallels are known as tropics; the other two are called circles.

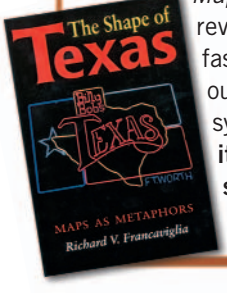
Tropics and circles are based on the sun's path across the sky during the year. The Tropic of Cancer is located at about 23°30'N. It marks the northernmost distance from the equator where the sun passes directly overhead at noon. The Tropic of Capricorn, located at about 23°30'S, marks the southernmost point where this occurs.

The Arctic Circle, located at about 66°30'N, and the Antarctic Circle, located at about 66°30'S, also are related to changes in the sun's position. On the longest day of the year in the Northern Hemisphere—around

Lone Star Legends

Richard Francaviglia

As a newcomer to Texas, Dr. Richard Francaviglia was amazed by how often the outline shape of Texas is used to represent "something Texan." Appearing on company logos, book covers, street signs, and other advertisements, the outline shape of our state is recognized across the globe as a symbol of Texas culture. Today, Dr. Francaviglia teaches at the University of Texas at Arlington and has written several books. *The Shape of Texas: Maps As Metaphors* reveals the author's fascination with the outline of Texas as a symbol. ● **On what items have you seen the outline shape of Texas?**



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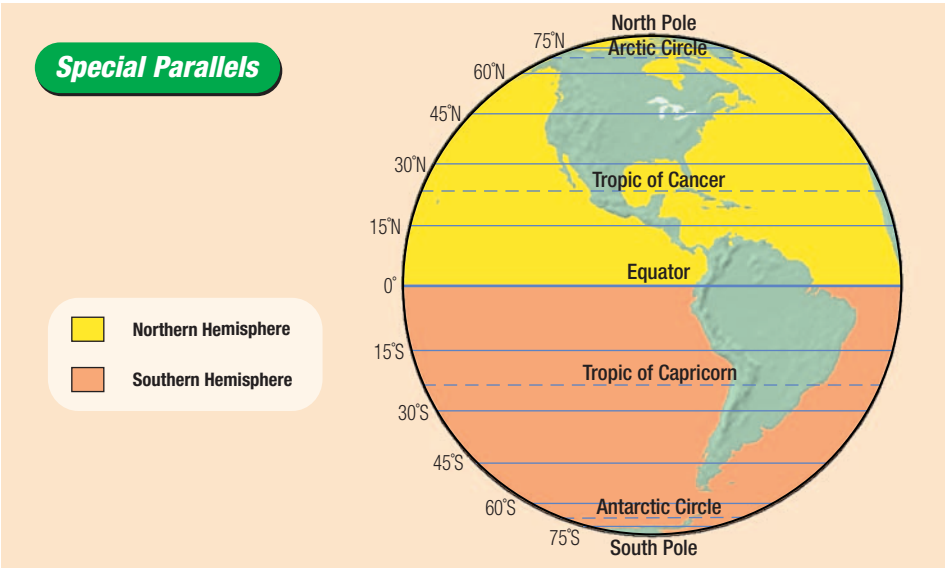
▲ At Paint Rock in Central Texas, archaeologists recently discovered an ancient sun dagger. On the winter solstice, a dagger of light from between two rocks strikes a painting on the rock face below.
● **Why might the solstice have been important to Native Texans?**



▲ The four special parallels usually are referred to by a name rather than by a number.
● **Which special parallel is located closest to Texas?**

June 21—the sun never sets in places north of the Arctic Circle. This day is known as the summer solstice in the Northern Hemisphere. On that same day in the Southern Hemisphere, the sun does not rise above the horizon in places south of the Antarctic Circle. Around December 21 or 22 each year, the opposite occurs. The sun never rises north of the Arctic Circle and never sets south of the Antarctic Circle. This day is known as the winter solstice in the Northern Hemisphere, where it is the shortest day of the year. This pattern of opposites extends to the seasons in both hemispheres. When it is summer in Texas and other parts of the Northern Hemisphere, it is winter in the Southern Hemisphere, and vice versa.

SECTION 1 ASSESSMENT

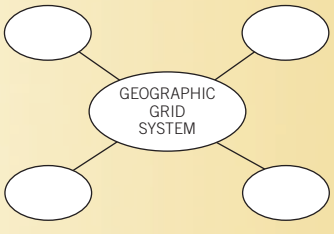
Terms & Names

Identify:

- latitude
- longitude
- hemisphere
- equator
- prime meridian

Organizing Information

Use a cluster diagram like the one shown to list some of the features of the geographic grid system.



Critical Thinking

1. Using the map shown on page 31, identify the city at each of the following absolute locations:
   31°48'N, 106°24'W
   29°32'N, 98°28'W
   29°39'N, 95°17'W
2. In Texas, is the sun ever directly overhead at noon? Why or why not?
3. How many degrees are there between the southernmost part of Texas and the equator?

Interact with History

Review your response to *Interact with History* in your Texas Notebook. What questions on your list would you add or change? Is relative or absolute data more important for pinpointing your target location?

ACTIVITY

Geography

Write directions and draw a map from your school to your home. Did you use relative or absolute location? Why?

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SECTION 2

Understanding Scale and Projections

Why It Matters Now

For a map to be useful, it is important to select the one that will best show the information you need.

TERMS & NAMES

scale, cartographer, projection

OBJECTIVES

1. Compare and contrast different methods of showing scale.
2. Analyze map characteristics to determine the type of map projection.
3. Interpret information from different types of map projections.

MAIN IDEA

Many different factors must be considered when creating a map. Most importantly, mapmakers must consider purpose, size, and accuracy.

A REAL-LIFE STORY

Gerardus Mercator was probably the most important mapmaker of the 1500s. Like others before him, he set out to find a way to accurately translate the sphere of the earth onto a flat map. Walter Ghim, a neighbor, was there when Mercator began working on his now famous world map of 1569. Ghim remembers:

Gerardus Mercator

[Mercator] set out, for scholars, travelers, and seafarers to see with their own eyes, a most accurate description of the world in large format, projecting the globe on to a flat surface by a new and convenient device, which corresponded so closely to the squaring of the circle that nothing, as I have often heard from his own mouth, seemed to be lacking except formal proof.

Making the Earth Fit on a Page

Imagine how difficult it would be to use maps if they were the same size as the areas they describe. Just think—a map of your town would be as big as the town itself! That's why maps are simply models of actual areas. Just as a model car is only a fraction of the size of a real car, a map is much smaller than the area it describes.

Most maps are drawn to **scale.** That is, distances on a map are proportionate to actual distances on the earth. For instance, a map of Texas might have a scale of 1 inch to 100 miles. That means a distance of 1 inch on the map represents 100 actual miles in Texas.

scale *the relationship between a distance on a map and the actual distance it represents*

Not all maps use the same scale. Small-scale maps represent a large area. Large-scale maps represent a smaller area. These are used to show more detail.

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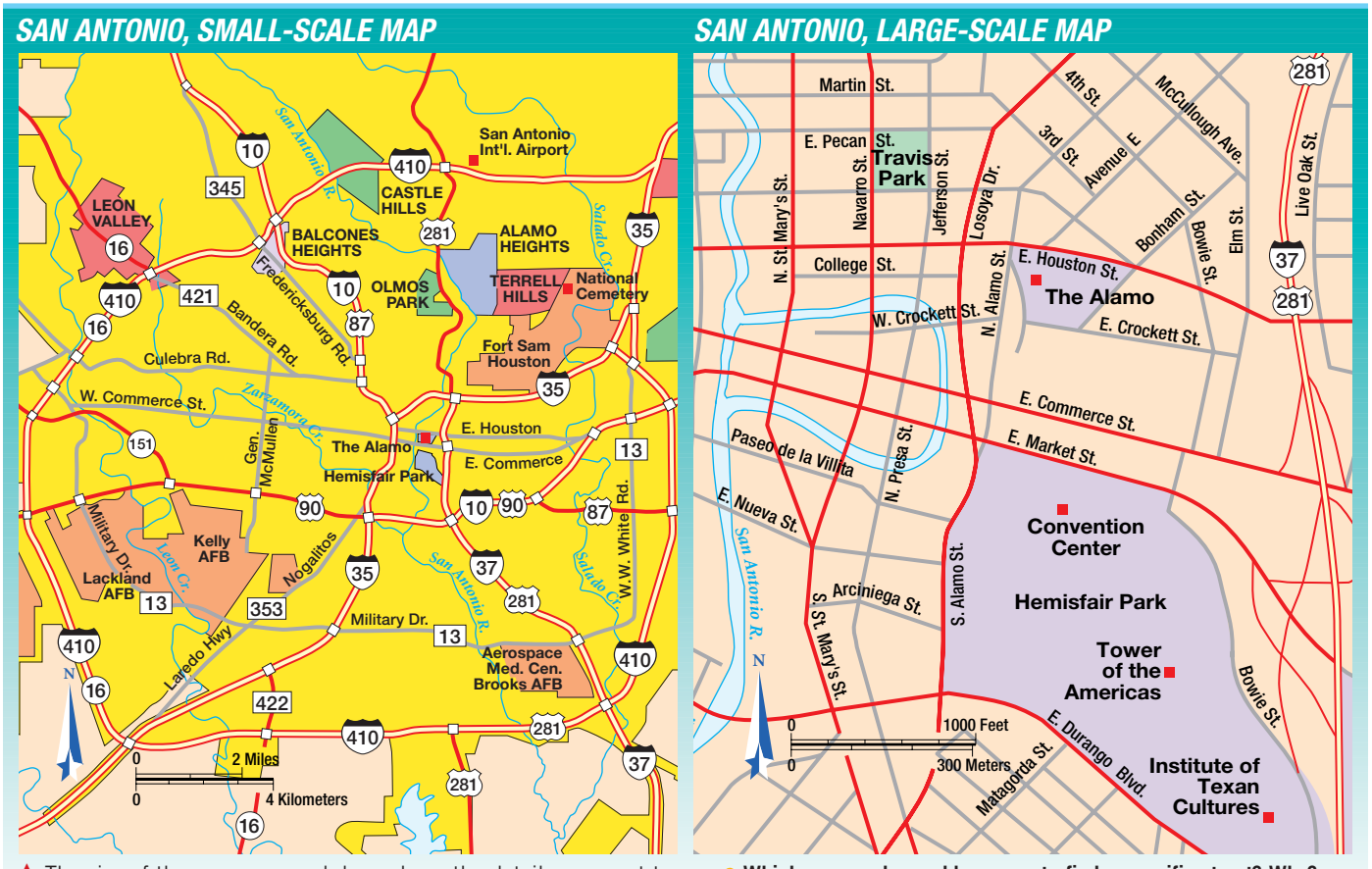

▲ The size of the map you need depends on the details you want to see. ● **Which map scale would you use to find a specific street? Why?**

Three Ways to Show Scale

There are three ways to show scale on a map. First, scale can be shown as a bar graph, with distances represented in miles or kilometers. Graphic scales are very helpful because you can use a ruler or scrap of paper to measure the bar on the scale and then use the same device to measure the distance on a map. Because they are so easy to use, graphic scales are common on maps.

Scale also can be stated in words, such as "1 inch equals 16 miles." This type of scale often is used along with a fractional scale to make distances easier to understand.

A fractional scale may be used to show how many times a map is reduced from actual size. A fractional scale of $\frac{1}{1{,}000{,}000}$, for example, means that the map is reduced 1 million times. This type of scale also can be shown as a ratio, such as 1:1,000,000. It means that 1 unit, such as an inch, on the map represents 1,000,000 of the same units—or 1 million inches—in actual area.

So, for example, on a fractional scale of 1:1,000,000, you know that 1 inch on the map equals 1 million inches of real distance. But what does that mean in miles or kilometers? **Cartographers** know that 1 million inches equals about 16 miles. They often add this explanation to the map key. This information helps you interpret the distances shown on the map.

THREE WAYS TO SHOW SCALE

GRAPHIC SCALE

0 4 8 12 16 Miles

0 5 10 15 20 25 Kilometers

WRITTEN SCALE

1 inch equals 16 miles

FRACTIONAL SCALE

1:1,000,000 OR $\frac{1}{1{,}000{,}000}$

cartographer *a person who makes maps*

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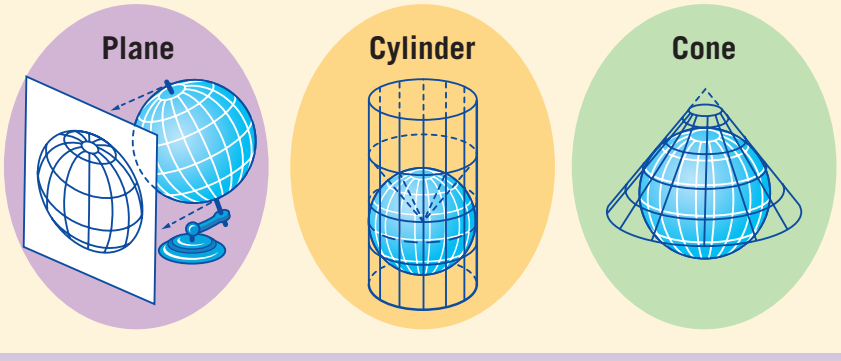
SHAPES USED TO DEVELOP MAP PROJECTIONS



▲ Cartographers must understand the type of map they want to create in order to project the information correctly. ● **Which shape would work best to show Texas?**

Problems for Cartographers

Somehow, the earth's round surface must be transferred to the flat surface of a map. It is impossible to do this without distorting, or changing, the image in some way. In some cases this distortion can cause the scale of a map to change from place to place. The shapes of some landmasses and bodies of water also might change. Some compass directions can even change. In making a map a cartographer has to decide which kinds of distortion to avoid and which to minimize.

To make a flat image of the earth for a map, the geographic grid must first be displayed onto a flat surface or onto a shape that can be unrolled and made flat. Cartographers use three main shapes for map **projections:** a plane, a cylinder, and a cone. Each of these shapes works best for maps showing a certain part of the globe. For instance, planes often are used to make maps of polar areas. If the map is centered around one of the poles, distortion around the edges does not create too much of a problem. A cylinder shape touches the globe at the equator, producing the least distortion of low-latitude areas. A cone touches the earth along one of its middle latitudes. Cone shapes are best used for drawing maps of places between the polar and low-latitude areas.

projection *the transfer of an image of a curved surface onto a flat surface*

Different Kinds of Projections

Even after being drawn with the proper projection, maps still have some distortion. Depending on which projection a mapmaker selects, the features of the earth may appear to stretch or shrink. Some projections distort the size of land areas. Others distort the shape. To show the state of Texas most accurately, many cartographers use projections made with cones. These are known as conic projections. Since the United States is in the middle latitudes, conic projections show our country with the least distortion. Most of us are not professional mapmakers. We depend on experts to select the projection best suited to showing specific information. Understanding the limitations of map projections can help us select the best map for each task.

THEN & NOW

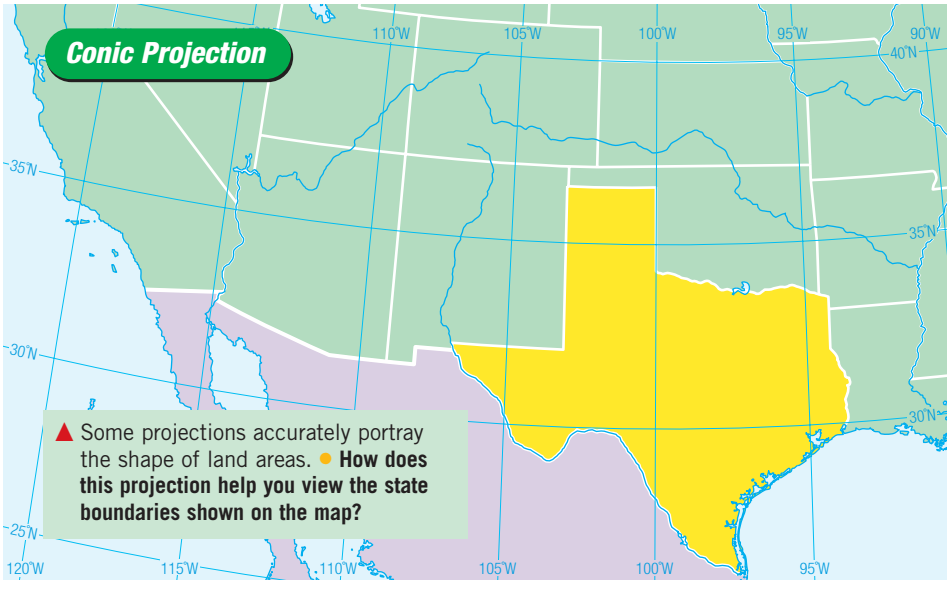
CARTOGRAPHY

Cartography dates as far back as 2300 B.C., when Babylonians first drew maps on clay tablets. Later cartographers used surveying tools, wood, copper, ink, and paper to produce maps. Today cartographers use high-tech tools such as aerial photography, satellite imaging, and computers in mapmaking. ● **In what ways is cartography the same today as in the past?**

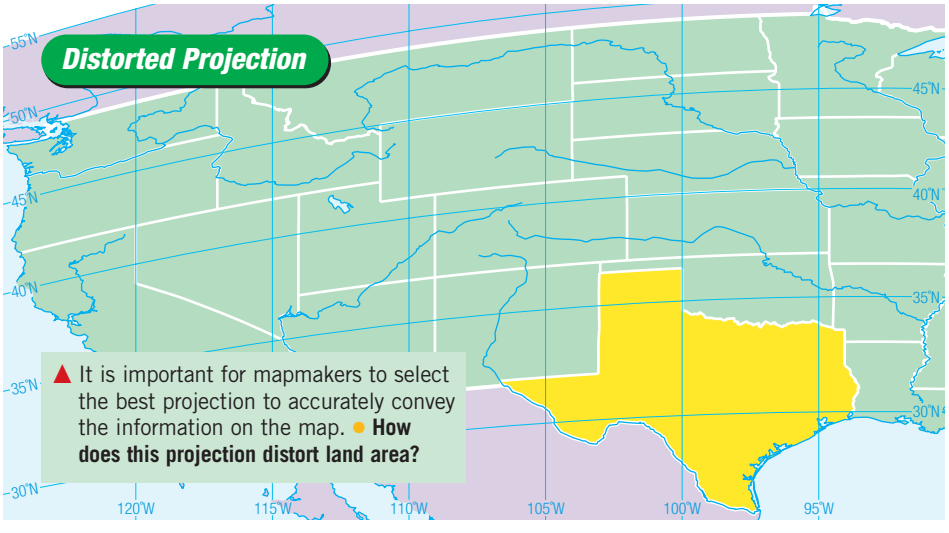
Multicultural Connections

Map Focus

Focusing primarily on one's own homeland is a trait shared by most people around the world. For instance, maps for Texas social studies students usually show Texas in the center of the map. But students in China typically view maps with China in the center, Israeli students see Israel as the central point, and so on throughout the world.



▲ Some projections accurately portray the shape of land areas. ● **How does this projection help you view the state boundaries shown on the map?**



▲ It is important for mapmakers to select the best projection to accurately convey the information on the map. ● **How does this projection distort land area?**

SECTION 2 ASSESSMENT

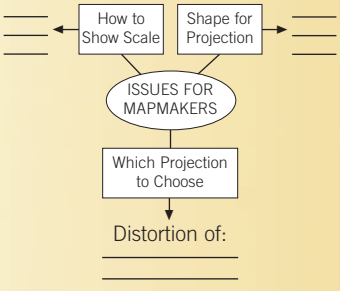
Terms & Names

Identify:

- scale
- cartographer
- projection

Organizing Information

Use a thematic map like the one shown to list how the main shapes are used for map projections.



Critical Thinking

1. In what ways would a map of your neighborhood be similar to and different from a map of Texas? Explain.
2. Onto what type of surface would you project the geographic grid if you were making a map of Texas? of Canada? Why?

A Real-Life Story

Review *A Real-Life Story* on page 33. How do you think mapmakers feel about Mercator's contribution to mapmaking?

ACTIVITY

Geography

Measure and record the size of your classroom or a room in your home to the nearest foot. Then use the dimensions to make a scale drawing of the room.

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Outlining Information

LEARNING *the Skill*

An outline is a summary of main points and the details that support them. When reading, writing, or speaking about a topic, you can use an outline to organize facts and ideas and to see how they relate.

To outline information, use the following steps:

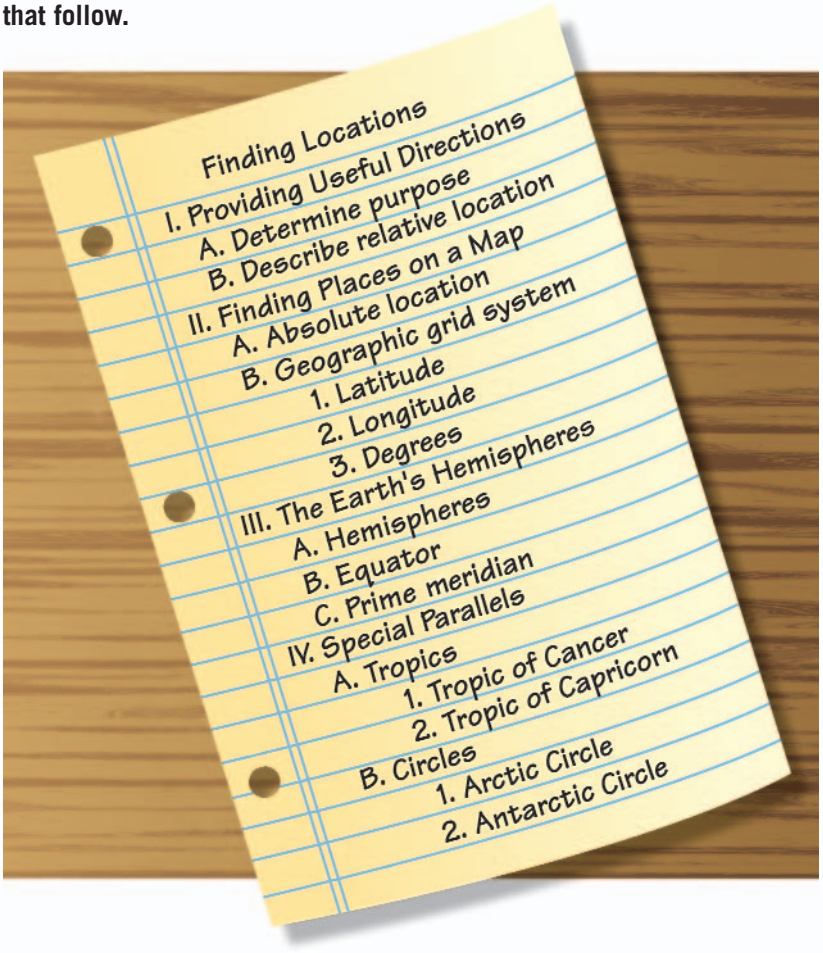
- As you read the material, identify the main ideas. On your outline, label each main idea with a Roman numeral, such as I, II, III, and so on.
- List any subtopics that support your main ideas and label them with capital letters. Each subtopic should be indented and listed below the main idea it supports.
- List any details that support the subtopics and label them with numbers. Each detail should be indented and listed below the subtopic it supports.

Memorize the "Rule of Twos": If you have a Roman numeral I, then you must at least have a Roman numeral II; if you have an *A* for a subtopic, you must at least have a *B*; if you have a number 1 supporting detail, then you must at least have a number 2 supporting detail.

Use the same grammatical form for all entries on your outline. If one entry is a complete sentence, then all other entries for that section should be complete sentences.

PRACTICING *the Skill*

Review the outline of Section 1 below. Then answer the questions that follow.



1. What are the main ideas?
2. What are the subtopics for *Special Parallels*?
3. Summarize this section in one or two sentences.

APPLYING *the Skill*

Using the outlining strategies and the model above, outline the information in Section 2 of this chapter. Working with a partner, compare your outlines and discuss any differences. As a class, discuss when and how you would most effectively use outlining in your social studies class.

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SECTION 3

Exploring Different Kinds of Maps

Why It Matters Now

Knowing how to read different types of maps can help you better understand your world.

TERMS & NAMES	OBJECTIVES	MAIN IDEA
general-purpose map, special-purpose map, **physical map, topography, political map, physical-political map, legend,** symbol	1. Compare and contrast general-purpose and special-purpose maps. 2. Categorize maps as being either general-purpose or special-purpose. 3. Infer information about maps.	Different types of maps answer different questions. Some provide general information, while others show more specific data.

WHAT *Would You Do?*

Write your response to Interact with History in your Texas Notebook.

INTERACT WITH HISTORY

Imagine that you just started working for a company that makes maps. On your first day on the job, the boss leaves a note on your desk that says a client is coming into town and will need a map to get around. What types of questions will you ask to better determine which type of map to create? And once you learn which type of map to create, what information will you need to include to make it useful for the client?

Common Map Features

Maps help communicate how places relate to one another in terms of direction, distance, and location. Most maps show features that help the map reader interpret the information. These features include the map title, scale, location, symbols, and key. The map title clarifies the map's purpose. A scale shows the relationship between the size of the elements on the map and the actual areas they represent. Location can be shown by a directional arrow, called a compass rose, or by lines of latitude and longitude. These lines form a grid that cartographers use to pinpoint locations. Symbols on the map are summarized in a map key. Dots, symbols, lines, patterns, colors, and even shapes can represent information on a map.

▼ Modern cartographers have a wide range of options at their fingertips. ● **In what ways do you think cartography has changed in the last 20 years?**

Types of Maps

What do you think of when you hear the word "map"? You may think of a road map or a city street map. However, maps can show much more than how to get from one place to another. There are many different kinds of maps. They are usually grouped into two main categories: general-purpose maps and special-purpose maps.

General-Purpose Maps

A number of the maps in your classroom likely are general-purpose maps. These maps are designed to tell where places are located and a little bit about what these places are like. One type of general-purpose map is a **physical map.** Physical maps show the **topography** of an area such as its mountains, valleys, rivers, and lakes. These maps, also called topographic or elevation maps, often have different shades of color to show differences in elevation.

Another common type of general-purpose map is a **political map.** Political maps show boundaries that people have created such as those between counties, states, and countries. These maps also may identify towns, cities, state and national parks, the capitals of states and countries, and certain landmarks.

The general-purpose maps found in your classroom most likely are **physical-political maps.** These maps show some political units such as cities, counties, states, or countries as well as key physical features such as rivers, bays, and mountain ranges.

physical map *a general-purpose map that shows the natural features of an area*

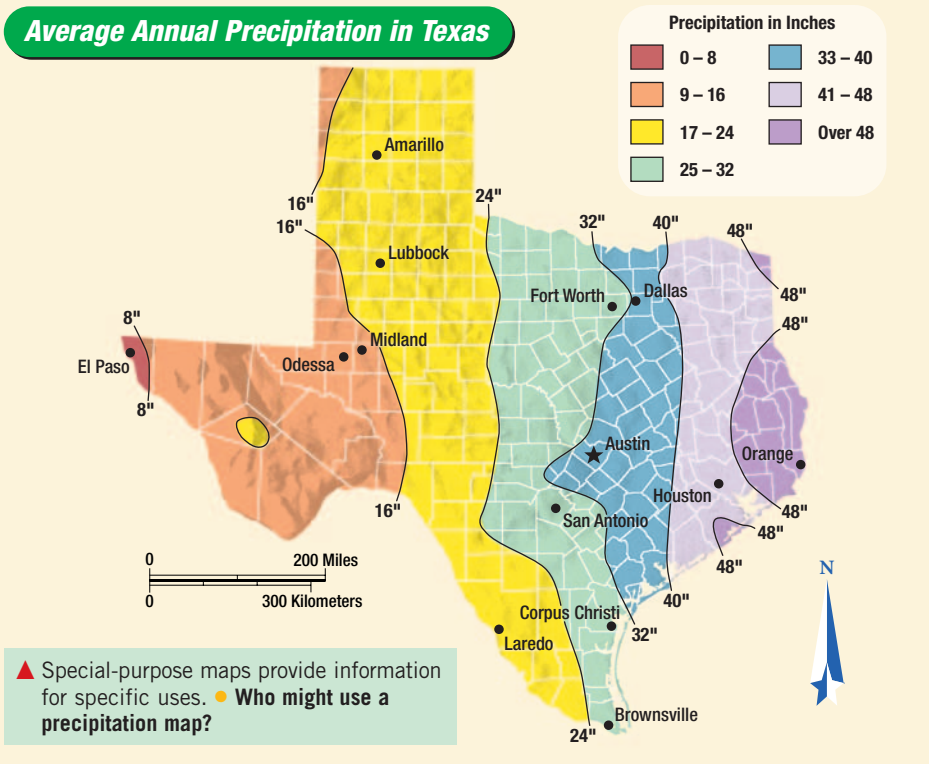
topography *the physical features of the earth's surface and their relationship to one another in terms of location and elevation*

political map *a general-purpose map that shows recognized boundaries in an area*

physical-political map *a general-purpose map that shows both the topography and recognized boundaries of an area*

Special-Purpose Maps

General-purpose maps provide broad information about an area. Special-purpose maps—sometimes called thematic maps—show information about a specific topic. Military maps, natural resource maps, precipitation maps, historical maps, and city street maps are just a few examples of special-purpose maps. Each shows how something—such as average annual precipitation—is distributed within an area.



▲ Special-purpose maps provide information for specific uses. ● **Who might use a precipitation map?**

▲ The amount of rainfall varies widely from one region of Texas to the next. ● **Why is it important to know the average precipitation for an area?**

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Legends and Symbols

legend *an explanation of a map's symbols and scale*

Most maps have a **legend,** or key. The legend tells what the symbols on the map mean. Maps use symbols to mean different things. Colors may show elevation. Dots or circles may show towns and cities. Sometimes the color or size of the dots changes to show differences in population. The legend of the map on page 39 shows what all the colors mean.

Some maps use different styles, sizes, and colors to represent different city sizes or to show other kinds of features on a map. General-purpose maps usually use italic print to show water features such as rivers, lakes, and oceans. Other type styles are used for country names, mountain ranges, and other features on a map.

Special-purpose maps often use special symbols for the things they show. A rainfall map may use lines to indicate certain amounts of rainfall. An agricultural production map may use symbols like cotton bolls and ears of corn to show where those products grow.

Linking History

To Technology

Satellites help us not only to map the earth's surface but also to pinpoint the exact location of objects. The U.S. military first developed the global positioning system, or GPS, to track the positions of troops and tanks. Today some carmakers use this same technology to provide drivers with on-the-spot maps and directions. ● **How might early explorers of Texas have benefited from GPS?**

What Can You Learn from Maps?

Maps are important tools for learning about the world. We use maps so regularly in our lives that you may not even realize how much you use them. Every time you look at a colorful satellite image on the television or follow a specific route on a road atlas, you are using a type of map. When you check a store's location at the mall, you use a map. Maps tell you not only where things are located but also how they are distributed throughout the land. Without maps the world would certainly be a much more difficult place to understand.

SECTION 3 ASSESSMENT

Terms & Names

Identify:

- physical map
- topography
- political map
- physical-political map
- legend

Organizing Information

Use a chart like the one below to list different types of maps. Include a reason to use each type of map in your chart.

TYPES OF MAPS	
General-Purpose	Special-Purpose
•	•
•	•
•	•

Critical Thinking

1. In what ways are general-purpose and special-purpose maps the same? How are they different?
2. Categorize each of the following as either a general-purpose map or a special-purpose map: map of oil production in West Texas; map showing lakes, rivers, and landforms in Texas; map of Texas boundaries before and after the Texas Revolution.
3. Why is a legend also called a map key?

Interact with History

Review your response to *Interact with History* in your Texas Notebook. Having studied the different kinds of maps and their features, would you create a different map? What additional questions would you ask to improve your map?

ACTIVITY

Geography

Identify a topic that can be illustrated on a special-purpose map of Texas. Research the data and create a special-purpose map from the information you find.

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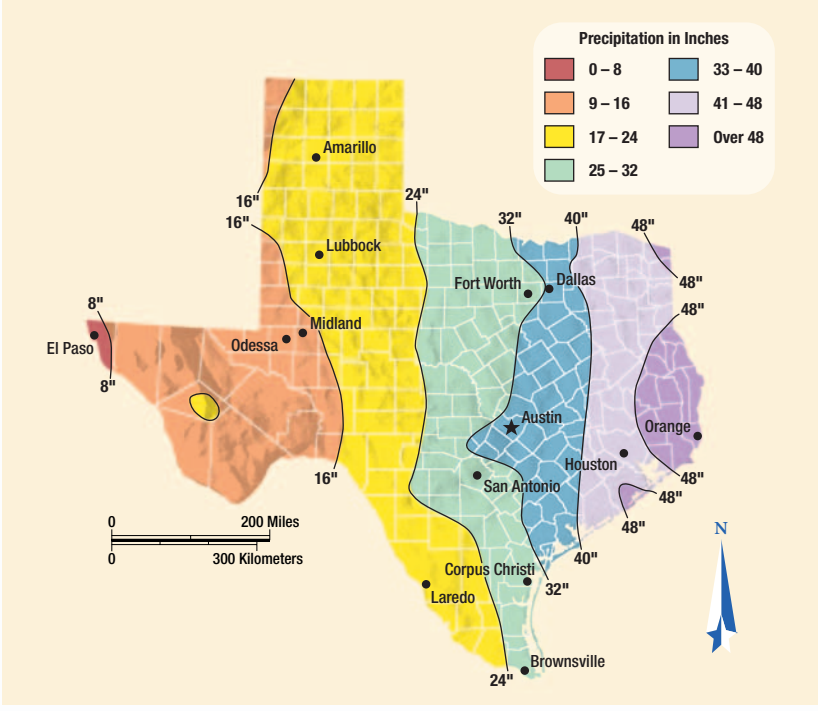
Reading a Precipitation Map

LEARNING *the Skill*

Precipitation is an important part of climate. Precipitation is any moisture that falls from the sky in the form of rain, snow, sleet, or hail. If you know how to read a precipitation map, you can learn lots of interesting things about climate. A precipitation map will show which places have enough rainfall for farming and which places need irrigation. You can identify desert areas and places where rainfall is very high.

To read a precipitation map, use the following steps:

- Analyze the legend. It illustrates how many inches of precipitation each color represents. Notice how the different bands of color are used to identify how much precipitation falls in the areas between the lines on the map.
- Now look at the map. The number at the end of each line shows how much precipitation falls along that line. For example, look at the line numbered 32. This is the line where 32 inches of precipitation fall each year. Austin, our capital, is located east of this line. Austin gets an average of about 33 inches of precipitation each year.
- Estimate the amount of precipitation that falls in places between the lines by looking at how far from a line a place is. If each line shows 8 inches more or less precipitation than the next line, a place halfway between the lines probably gets about 4 more or 4 fewer inches of precipitation a year.



PRACTICING *the Skill*

Study the map above. Then answer the questions that follow.

1. Which city in Texas gets the most precipitation?
2. Which city gets the least precipitation?
3. Which city receives about 32 inches of precipitation each year?
4. How much precipitation does Houston receive in an average year?
5. How much precipitation falls in Amarillo in a year?
6. If you were to travel south from Forth Worth to Brownsville, how would the amount of precipitation change?
7. If you were to travel from Orange to El Paso, how would the precipitation change?

APPLYING *the Skill*

Using online or other resources, locate a precipitation map of Texas or the United States. Study the map; analyze the legend. Apply this information to estimate the precipitation in your area for the upcoming week.

Go to www.celebratingtexas.com to research this topic.

CHAPTER 2 ASSESSMENT

VISUAL Summary

To accurately show information on a map, the cartographers must consider the purpose of the map and the area to be shown. Mapmakers can then determine the projection that best portrays this information.

Maps use relative and absolute location to identify where places are on the earth.

Mapmakers consider factors such as the purpose and the size of the map.

Various types of maps provide different kinds of information for the reader.

TYPES OF MAPS	
Physical	Product
Political	Street
Physical-political	Resource
Historical	Climate

Maps provide us with a great deal of information about our surroundings.

TERMS & NAMES

Explain the significance of each of the following:

1. parallel
2. meridian
3. degree
4. Tropic of Cancer
5. Tropic of Capricorn
6. Arctic Circle
7. Antarctic Circle
8. general-purpose map
9. special-purpose map
10. symbol

REVIEW QUESTIONS

Finding Locations *(pages 28–32)*

1. In the coordinates 30°50'N, 96°12'W, which measurement is stated first, latitude or longitude?
2. At which pole do the nights get shorter during the month of May? Why?

Understanding Scale and Projections *(pages 33–36)*

3. Which would probably be drawn to a smaller scale, a map of the Western Hemisphere or a map of your city? Explain.
4. What causes the distortion found in projections?

Exploring Different Kinds of Maps *(pages 38–40)*

5. Why do you think maps that show boundaries between places are called political maps?
6. What type of map would show growth in the Texas cattle industry over the past century?

READING SOCIAL STUDIES

After You Read

Add a column to your completed chart. In column 4 write the page number where a map in this chapter illustrates the use of each term.

TERM	MEANING	EXAMPLE	MAP
latitude (parallels)			
longitude (meridians)			
hemisphere			
Scale			
projection			
general-purpose map			
special-purpose map			
legend			

CRITICAL THINKING

Making Inferences

1. Are the coordinates 25°18'S, 130°42'E found in the Northern or the Southern Hemisphere? the Eastern or the Western Hemisphere? Explain why you should not need a map to know the correct answers.

Comparing and Contrasting

2. What type of map projection would probably be most useful to students studying Texas? Give the reasons for your choice.

Supporting Opinions

3. Which are more useful, maps or globes? Support your opinion with at least two reasons.

MAP & GEOGRAPHY SKILLS

Applying Skills

1. What type of map is shown here? What is another name for this type of map?
2. The state of Texas primarily lies between which lines of latitude? which lines of longitude?
3. What are two different ways to describe the location of the capital of Texas?

SOCIAL STUDIES SKILLBUILDER

Outlining Information

On a separate sheet of paper, outline Section 3 of this chapter. Then answer the following questions.

1. How can you quickly find the main ideas in Section 3?
2. Where are subtopics listed in an outline?
3. Where are the supporting details listed in an outline?
4. Besides using different numbering systems, how can you distinguish different parts of an outline?
5. Summarize the main ideas of Section 3 in your own words.

CHAPTER PROJECT

Creating a Geography Handbook Working in groups of four or five, create a geography handbook illustrating each of the concepts you learned about in this chapter. Collect illustrations from newspapers, magazines, other publications, or the Internet, or create your own illustrations to represent the following: relative location, absolute location, latitude, longitude, hemispheres, a physical map of Texas, a political map of Texas, a physical-political map of Texas, and a special-purpose map showing the climate of Texas. Place each visual on its own page along with a written explanation of the concept it illustrates.

SCIENCE, TECHNOLOGY & SOCIETY ACTIVITY

Researching the History of Mapmaking

Research the evolution of cartography from hand-drawn to computer-generated mapmaking. After your research is complete, create an outline of your findings. As a class, debate the pros and cons of creating maps by hand and by computer.

Go to www.celebratingtexas.com to research this topic.

CITIZENSHIP ACTIVITY

Creating a City Services Guide When people move to a new city, they often do not know where to find many important services. Create a special-purpose map of your community and clearly note the locations of important places such as the police department, city hall, courthouse, water department, electric company, airport, bus terminal, hospitals, schools, stadiums, parks, and so on. Create a legend for your map. Make copies of your map and display them in key locations around your community, such as those shown on your map.