Lessons to Support the *Giant Traveling Map of Texas*

Developed by

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*Giant Traveling Map of Texas*

Texas Alliance for Geographic Education

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LET'S EXPLORE TEXAS: WALKABOUT
(adapted from National Geographic Lesson “Let’s Explore Africa”)

Purpose

To gain a spatial view of the state of Texas

TEKS Standards

*Grade 4 Social Studies*

(6) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to: (A) apply geographic tools, including grid systems, legends, symbols, scales, and compass roses, to construct and interpret maps; (B) translate geographic data, population distribution, and natural resources into a variety of formats such as graphs and maps

Grade Levels: 3rd - 7th

Class Time: 1 class period

Materials: Giant Traveling Map of Texas, chains, spot markers, compass

Instructional Information

- This is one of the largest maps of Texas. Students walk on it and find geographic patterns.
- Texas is the second largest state in the United States.
- The map was created by the Texas Alliance of Geographic Education in partnership with National Geographic and is traveling all over Texas, going from school to school.

Student Activity/Assessment

Use the compass to orient the map, with the northern part of the map, aligned north. Students will stand on the side of map so they are facing north. The walkabout begins at the most southern place in Texas. Here are some ideas for guiding the geographic walkabout.

1. Begin by finding the point of Texas that is closest to you. Brownsville is the most southern city in Texas. It is on two of the borders. One is the border with the country of Mexico. The other border is the Gulf of Mexico.
2. Follow the coastline of Texas north and east to the large port city of Houston. It is the largest city in Texas and the 4th largest city in the United States. NASA Space Center is located near Houston.
3. From Houston, continue along the coastline of Texas north and eastward to the state boundary with Louisiana. Near the boundary is the city of Beaumont and the mouth of the Sabine River.
4. Trace the Sabine River northward, then walk along the short boundary with Arkansas (notice how straight the line is) until you reach the Red River. The city of Longview in East Texas is located in the region known as the Piney Woods.
5. The Red River separates Texas and Oklahoma north of Dallas and Fort Worth. Dallas is the 2nd largest city in Texas. West and north from Dallas-Fort Worth, land becomes drier with fewer trees and fewer people. In this region, large herds of buffalo roamed and Indian tribes, mainly Comanche, hunted and traded. They gained fast and strong horses to live on the Texas plains during the 1700s and 1800s. A large area is known a Comancheria because of the Comanche tribal dominance of the area during that period of history.

6. Amarillo and the area north and west is called the Panhandle. It shares straight line boundaries with both Oklahoma and New Mexico. The flat, high landscape extends nearly 200 miles southeastward. It is known as the Llano Estacado or Caprock because the top layer of it has a layer of caliche (ca-lee-chee), material that has not eroded like the land around it. It is very flat but on the edges are many canyons. Palo Duro Canyon is between Amarillo and Lubbock.

7. The western boundary of the state is marked by a line of longitude (103 degrees west) that is a straight line on the map. It is easy to follow south until it meets the southern boundary of New Mexico at a latitude of 32 degrees north.

8. The boundary of Texas also includes a small piece of land that extends even further west. El Paso, the most western city of Texas, is located in this area. El Paso is on the Rio Grande River that marks the international boundary between the United States and Mexico. This boundary separates the countries for 1,255 miles, from El Paso to Brownsville. Walk along the river that flows through desert areas, rugged rock formations, farmlands, and then the coastal region.

9. One feature along the river is a place where the course of the river takes a huge curve northward. This bend in the river is home to Big Bend National Park. The high desert is a rich habitat for desert plants such as the century plant and unusual animals such as the javelina.

10. The middle of the state has important cities, rivers, and landscapes. One of these is the state capital, Austin. While you are standing on Austin, look around in all directions to see the distance to the state boundaries.

Guiding Questions

What countries, states, and bodies of water border Texas?

Where do the borders of Texas follow rivers? Which ones can you name?

Where are borders marked as straight lines?

Walk across the state. How many steps does it take to travel from El Paso to Texarkana? How far north to south from Amarillo to Brownsville?

Assessment (informal)

Engage students in reviewing the boundaries with a game of Simon Says...

Simon Says ... girls stand on a straight line boundary; boys stand on a river boundary; all face north, all face west; Team 1 sits along the coastline; Team 2 places markers on major cities; Team 3 stands in the Panhandle; Team 4 makes a circle around the title of the map.

Additional resource: Empire of the Summer Moon by SC Gwynne
A SHAPELY STATE

Purpose
- To visualize the shape of the state of Texas
- To identify physical boundaries and adjacent national and international political boundaries
- To create a map of the state that demonstrates knowledge of relative distance and direction, river patterns, and latitude/longitude boundaries

TEKS Standards

**Grade 4 Social Studies**
(7) Geography. The student understands the concept of regions. The student is expected to (A) describe a variety of regions in Texas and the United States such as political, population, and economic regions that result from patterns of human activity.

(22) Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to (D) create written and visual material such as journal entries, reports, graphic organizers, outlines, and bibliographies.

**Grade 7 Social Studies**
(1-6) History. The student understands traditional historical points of reference and how individuals, events, and shaped the history of Texas.

(9) Geography. The student understands the location and characteristics of places and regions of Texas. The student is expected to (A) locate the Mountains and Basins, Great Plains, North Central Plains, and Coastal Plains regions and places of importance in Texas during the 19th, 20th, and 21st centuries such as major cities, rivers, natural and historic landmarks, political and cultural regions, and local points of interest; (B) compare places and regions of Texas in terms of physical and human characteristics.

(21) Social studies skills. The student applies critical-thinking skills to organize and use information acquired through established research methodologies from a variety of valid sources, including electronic technology. The student is expected to (C) organize and interpret information from outlines, reports, databases, and visuals, including graphs, charts, timelines, and maps.

(22) Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to (D) create written, oral, and visual presentations of social studies information.

**Time:** 1-2 class periods

**Grade Levels:** 3rd-7th

**Materials:** giant map, plastic chains, cones, vinyl spot markers, 12 X 12 sheets of medium weight drawing paper for torn-out map

**Instructional Information**
The process of walking on the map and then tearing out a shape focuses attention on the spatial details. Geographic concepts of distance, direction, size, and shape become concrete concepts as students actively engage in multiple modes of learning. The torn map establishes a strong foundation for
Lessons to Support the Giant Traveling Map of Texas

subsequent study with the Giant Traveling Map of Texas. The simplicity of the task encourages students to continue to improve the accuracy and “to make a better one.”

**Student Activity/Assessment**

1. In small groups, walk slowly around the boundaries of Texas, beginning at the southernmost tip of the state. Note which boundaries follow rivers and which are straight lines based on latitude and longitude lines.

2. Measure the distances across Texas using classmates as the units of measurement. How many students can stand shoulder to shoulder at the widest part of Texas – west to east? Measure the distance from the Red River to the southern tip of Texas. How many students that way? More or less than the width? Now measure just the north-south distance of the panhandle. Add that to the north-south distance from you measured before. How does the north/south distance compare with the east/west distance? Compare the east/west distance of the panhandle with the east/west distance from the New Mexico border to El Paso?

3. Measure the distance around Texas. How many students does it take to outline the whole state – on their knees with elbows extended? If students laid on the map, head to toe, how many would be needed to outline the state?

4. If you want to measure another way, use the chains and the scale printed on the map to figure out the distances in miles.

5. Step back from the map and look at it again, paying attention to the distances, directions, boundaries, and overall shape. Close your eyes and visualize it. Now you are ready to tear out your own working map of Texas. No drawing, no pencils, no scissors. When you are finished, label places you will need to remember – rivers, surrounding states and nations, and perhaps some major cities. Continue to add important places to your personal map of Texas. Perhaps even a buffalo or longhorn or state flag.

**Extension:** Critical Historical Thinking

In what ways do historical events influence the shape of our state? Why does Texas have a panhandle? Why does the western border stop following the Rio Grande? Why does it turn north where it does? Why is the Eastern border marked by Sabine River; the northern border uses the Red River?

1) Adams – Onis Treaty 1819. The Red River was an important avenue of commerce for the United States, eventually flowing into Mississippi River and the Gulf of Mexico. It had been the limit of Spanish holding against French. Thirty two degrees was the north/south line between rivers that marked the boundary with the Adams – Onis Treaty. The Red River boundary line continued west to 100th meridian, then due north to the Arkansas River, marking the panhandle’s eastern boundary. The treaty makers chose this boundary since they could not determine the exact location of the headwaters of the Red River in New Mexico. (The Red River headwaters is actually east of Santa Fe, New Mexico and the headwaters of the Arkansas River is in southern Colorado.)

2) The northern panhandle boundary was determined by the U.S. issue of slavery leading up to the Civil War. Missouri Compromise of 1820 agreed to allow slavery only in states south of 36 degrees 30
minutes. Texas joined the Union as a slave state and gave to the U.S. all the land north of that latitude line. It was known as Oklahoma Territory.

3) The southern boundary was determined by the Treaty with Mexico, 1836, saying that the Mexican Army would withdraw to south of Rio Grande.

4) With the Compromise of 1850, Texas sold all land west of 103 and north of Rio Grande/New Mexico southern border to US to help pay debts of Republic of Texas.

5) El Paso, on the Rio Grande, is about 32 degrees. Formerly, the land of Texas extended west and north of the present boundary. This line was the border between Mexico and what was designated as New Mexico.

**Assessment (informal)**

Students tear out a map of Texas using light-weight card stock. With the “map” they will demonstrate knowledge of the shape of Texas and will identify boundaries by labeling Red River, Rio Grande, and Sabine River. In other lessons, students will use map symbols to show additional Texas Rivers, selected cities, and physical landmarks. They will use colors to show physical regions and write descriptions on the back of the study map.

**Resource:** Image of Torn Map
REGIONS OF TEXAS

Purpose

- To explain the concept of a geographic region
- To locate physical regions of Texas on a map
- To identify characteristics that distinguish Texas regions using landforms, rivers, climate, and/or vegetation data

TEKS Standards

*Grade 4 Social Studies*

(7) Geography. The student understands the concept of regions. The student is expected to (A) describe a variety of regions in Texas and the United States such as political, population, and economic regions that result from patterns of human activity;

(B) identify, locate, and compare the geographic regions of Texas (Mountains and Basins, Great Plains, North Central Plains, Coastal Plains), including their landforms, climate, and vegetation.

Grade Levels: 3rd - 7th

Class Time: 1-2 class periods

Materials: plastic chains with Giant Traveling Map of Texas resources, descriptive information on regions; notebook paper or white boards for each group, and resource maps of vegetation, rainfall, rivers.

*Note: If students created their own “torn maps” of Texas in a preceding lesson, they may identify regions by lightly shading them. On the back, add a legend to show the name of the region each color represents.*

Background Information

Texas is the second largest of the 50 states in the United States. Studying the whole state can be confusing with all the different landscapes and climate, plants and animals, and population and culture.

One good way to learn about the state is to divide Texas geographically into areas, or regions, and pay attention to one area at a time. In this lesson, we will identify areas with similar physical landscapes and outline these regions with the chains. A region is an area where nearby places are similar in some way. There are many types of regions. You may outline a region of Texas where buffalo herds roamed or people speak Spanish or even the area of Dallas Cowboy fans.

The more you know about a region, the more ways you can divide it into smaller regions. For example, the Plains could be divided into the rolling plains, the high plains, the southern plains. The information here and the additional maps included in the resource material will help you define regions.

Instruction Information

The lesson identifies seven geographic regions that geographers use to study different parts of Texas: 1) Gulf Coastal Lowlands, 2) Piney Woods Coastal Interior 3) Prairies, Lakes, & Timbers, 4) North Central Plains, 5) Central Texas Hill Country 6) High Plains, and 7) Big Bend Mountains & Basins.
Gulf Coastal Lowlands
The Coastal Lowlands are along the Gulf Coast and border the Gulf of Mexico and extend inland. The land usually has low elevation, less than 300 feet above sea level. It is mostly level land that makes it easy to travel from place to place. People use boats on the water, cars and trucks on highways, trains on tracks, and planes at the airports to move people and goods in and out of Texas. The coastal plains region has beaches and many sites to see. It has lots of jobs. . . and lots of people! It also has plenty of rain (with 40 – 50 inches of rain per year), mostly warm temperatures, and is a place where many tropical and semi-tropical plants grow well. Seldom does the temperature dip below freezing. It is home to many birds that depend on water for their source of food.

Piney Woods (coastal interior)
Further inland, the land has some rolling hills and valleys and is slightly higher in elevation (300-500 feet above sea level). The northeastern part has rich farmland and pine forests. It receives plenty of rainfall with more than 40 inches per year. Some people call that the Piney Woods region. It is not as close to the sea, not as warm year round, and has deeper soil where pine trees grow well. It shares a border with Louisiana and used to be a major cotton growing area. The Sabine River and its tributaries mark the eastern boundary of the state.

Prairies, Lakes, and Timbers
The region of Blackland Prairie has fertile, black soil where tall grasses grew and once brought people to the area for farming, trading, and establishing homes. The region has many lakes, although some are man-made. Many areas have trees, prairies, or grassland. Today, the farmland is converted into a more built environment, with buildings, homes, and an extensive transportation network. This built environment serves the population of the Dallas-Fort Worth Metroplex. Even the cultivated land shows the influence of people. Many man-made lakes supply water and recreation. West of IH-35, fertile black soil of the region spans from the Red River to the Rio Grande in a narrow band shape. The prairie land stops as it meets the higher land to the west. The northern boundary of Texas, the Red River, is in this region. It often receives about 40 inches and generally is 1000 feet in elevation with rolling terrain that may be only 500 feet above sea level in some places.

North Central Plains (Cross timbers)
The northern plains region west of Dallas and Fort Worth becomes much drier with less vegetation. The region extends from the northern boundaries to the central part of the state. It begins just west of Fort Worth. Between scattered areas of grassland, trees and brush are tangled together so tightly that it was difficult for explorers and traders to go through the region. The cross timbers create a boundary between east and west Texas. Today, IH-35 marks the eastern edge of the cross timbers, just like early trade routes and cattle trails. The elevation in the north central plains gets higher the further west it goes. It ranges from about 1500 feet to 3000 feet in elevation. It also gets drier further west with 20-25 inches of rainfall a year.

Central Texas Hill Country (Edwards Plateau)
South of the north central plains is higher land called the Hill Country because of its hills, rivers, and plateaus. It extends west from the state capital and includes lakes, small ranches, state parks, and a rich cultural history in its small towns. Early explorers established trade routes along the rivers of the regions. Later, cities of Austin and San Antonio formed in the region between the lowlands and the high plains. Its warm climate, adequate rainfall, natural vegetation, and somewhat protected sites encouraged people to rest in the area as they journeyed across the southwest. The region has an annual
rainfall amount of 30 plus inches and elevation varies between about 1500-2000 feet (Dome of Enchanted Rock = 1,825 ft).

**High Plains**

The *high plains* is a dry region that includes the Panhandle that receives less than 20 inches of rainfall annually. It is a mixture of high, flat land with mesas, ridges, and steep walled canyons. Buffalo grass grows in clumps in the driest western parts. Hot and strong winds from the west dry out the soil and give rise to dust storms. For many years, the buffalo herds roamed this land. They lived on the rough grass and occasional water sources. In recent years, oil production and wind energy farms add to cotton growing and cattle ranching as resources of the land. The distances between towns is great and the population is low. It extends all the way to the dry, mountainous region of the southwest. It is also much higher in elevation than land to the east, 3,000-5,000 feet above sea level. It has less than 20 inches of rainfall a year and less than 10 inches in some places. A higher, flat area of west Texas is the Llano Estacado (3,200 feet). It is defined by its elevation. It is also called the Caprock. The caliche in the soil makes a hard layer that is not easily eroded by water and strong winds.

**Big Bend (Trans-Pecos, Basin & Range)**

Another dry region is found in far southwestern part of Texas is bounded on the south by a large bend in the Rio Grande River. The Big Bend region is named after the bend in the Rio Grande River and also includes the area to the west of the Pecos River, a desert region with rugged mountains and valleys. It is a long distance from other cities in Texas and its history and culture is mixed with Hispanic culture of the area. The region extends westward and includes the several mountainous areas such as the Guadalupe Mountains, the Davis Mountains, and the Chisos Mountains. The Rio Grande River Valley cuts through the rugged, dry mountains. The highest elevation in this region is Guadalupe Peak 8,749 feet but along the Rio Grande River, the land is 2,500 feet or less. Because of the mountains and valleys, some geographers call this a basin and range region. Rainfall in the western parts of the region is 10 inches per year, or less.

**Student Activities/Assessment**

**Whole Class Activity**

1. To begin, the instructor displays a list of the names of the physical regions of Texas and shows the locations on a map of Texas. An interactive display, i.e. smart board, will make it easy to sort the regions according to different traits such as elevation or rainfall. Colors on the Giant Map of Texas provide that information. Written descriptions in this lesson for the instructor may be useful for some groups.
2. First, students will sort the list of regions according to elevation. The region with the highest elevation is the top of the list while the region with the lowest elevation is at the bottom. What are some general conclusions we can make about the pattern of elevation across the state?
3. Next, students will identify the average amount of rainfall across each region. Make another list of the regions and sort it according to rainfall. The region with the highest amount of annual rainfall is at the top, and the region with the lowest amount is at the bottom. How does this order compare with the elevation list?
4. Third, use the vegetation map to identify the typical vegetation of each region: desert, savannah, prairies, forests, and grasslands.
**Small Group Activity**

1. Divide the class into seven small groups. Give each group a chain and the name of a region. They will use the chain to outline the region. Each group must pay particular attention to the boundaries with other regions/groups to determine where the landforms, climate, and vegetation are more like the rest of the region.

2. While sitting inside the region on the Giant Map, group members will locate rivers, tributaries, mountains, canyons, and other identifiable features.

3. Each small group will describe the region for rest of class. After each group’s description, other groups will record on their whiteboard how that region is distinct from their own region.

4. On the giant map, students will lie/sit/stand on the map and shape their bodies to represent the region’s topography (the way the land looks). Lying flat on the map may show coastal plains while pairs of student may sit in the cross timbers locking arms and legs to show the region as a barrier to human movement.

5. Repeat the activity at least one time with students assigned to study a different region. Repeating this activity over several sessions increases students’ knowledge of regions.

**Image:** Students on map outlining the shape of Texas

**Assessment**

1. At the conclusion of the group descriptions, students will be divided into three or four teams to play a relay game, “Where am I?” To begin, the leader gives a description of a region (see information resource paragraphs above). Information may be transferred to cards and students may take turns drawing a card and reading aloud the characteristics of a region on the card. The first person in each team then moves to that region and sits down. The leader asks the first one seated to name the region. Correct answer = team gets a point. Continue game until all students on all teams have had at least two turns

2. Written Assessment: Students will describe one region (not their home area) in a descriptive paragraph. The description will explain where is it in relation to other regions and in relation to boundaries of Texas? What features, climate, and vegetation are typical of the region? What other region in Texas is most like this region?

**Resource Maps** (available for download)

1) [River Basin Map of Texas](http://www.bgec.texas.edu/basins/) (Bureau of Economic Geology, University of Texas at Austin)
2) [Physiographic Map of Texas](http://www.bgec.texas.edu/physiography/) (Bureau of Economic Geology, University of Texas at Austin)
3) [Texas Regions](http://www.tpwd.texas.gov/texas-regions/) from Texas Parks and Wildlife Department
4) [Texas Almanac Vegetation Areas of Texas](http://www.almanac.texas.gov/vegetation/)  
5) [Vegetation Regions](http://www.lib.utexas.edu/maps/texas/vegetation_regions.html) (University of Texas Libraries, University of Texas at Austin)
EVERYTHING IS BIG IN TEXAS: CITIES AND POPULATION

Purpose
- To identify and locate some of the largest cities in Texas (2010 Census Data)
- To recognize characteristics of patterns and describe the spatial arrangements of population in Texas
- To read large numbers and make comparisons by representing large numbers with useable units for comparison
- To compare the population of large Texas cities to the 20 largest cities in the world and the 20 largest cities in the United States

TEKS Standards

Grade 4 Social Studies
(6) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to (A) apply geographic tools, including grid systems, legends, symbols, scales, and compass roses, to construct and interpret maps; and (B) translate geographic data, population distribution, and natural resources into a variety of formats such as graphs and maps.

Grade 7 Social Studies
(8) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to (A) create and interpret thematic maps, graphs, charts, models, and databases representing various aspects of Texas during the 19th, 20th, and 21st centuries; and (B) analyze and interpret geographic distributions and patterns in Texas during the 19th, 20th, and 21st centuries.
(11) Geography. The student understands the characteristics, distribution, and migration of population in Texas in the 19th, 20th, and 21st centuries. The student is expected to (C) analyze the effects of the changing population distribution and growth in Texas during the 20th and 21st centuries and the additional need for education, health care, and transportation.

Grade Levels: 4th – 7th

Suggested Time: 1-2 class periods

Materials: Giant Traveling Map of Texas, approximately 200 large Lego bricks, (one brick =100,000 million people), world map for locating world cities; Resource Population Charts: #1 Largest cities in world, #2 Largest cities in the United States, #3 Largest cities in Texas (attached)

Instructional Background: The lesson begins by looking at major cities around the world. The focus then narrows the view to the United States and then to Texas cities. The structure notes the geographical hierarchy of continents, nations, states, and cities. It provides a perspective on the lesson. The teacher may select a limited number of places with particular relevance to the students’ knowledge and experiences. The purpose of including world cities is to provide some context for learning rather than assessing students on knowledge of locations of world cities.
The World Population: Population of 20 Largest Cities in the World

*Spatial Theme of Hierarchy:* One way to look at population distribution patterns is by *continents.* North America has three of the largest cities; South America has two; Europe has none, Asia has 14; Africa has one; Australia has none; Antarctica has none. Locate these cities. Which continent has the most large cities?

Next level of the hierarchy, is to look at the *countries* within *continents.* There are approximately 200 countries in the world. The 20 largest cities are located in just 14 different countries. India has three, China has 3, United States and Japan each have two, and Indonesia, South Korea, Philippines, Pakistan, Brazil, Mexico, Egypt, Russia, Bangladesh, Argentina each has one. Locate these cities on a world map. What are the two most populated countries in the world? (China & India)

The next step in the hierarchy takes us to the level of *states.* For this lesson, we focus on the United States. Which states in the United States have the 20 largest cities? Texas has six; California has four. Locate them on a US map. Only one is located in each of the other 12 states represented on this list. 36/50 states do not have a city as large as El Paso (#19)

Continuing with the study of the spatial theme of hierarchy, the next level of the hierarchy looks at the *regions* within Texas that have the largest cities. For this lesson, we focus on just the top 12 cities.

*Cities:* Houston, San Antonio, Dallas, Corpus Christi, Austin, Garland, Arlington, Plano, Ft. Worth, Lubbock, El Paso, Laredo

*Regions:* a) Gulf Coastal Plains, b) Interior Lowlands, c) Prairie, Lakes, and Timbers, d) North Central Plains, e) High Plains, f) Hill Country and Plateaus, g) Big Bend (Basin & Range)

**Student Activity/Assessment**

1. Put a vinyl marker on each of these 6 large cities of Texas: Houston, San Antonio, Dallas, Austin, Fort Worth, El Paso
2. Divide the class into teams to build towers with the blocks to show the comparative populations within Texas urban areas.
3. Use the Legos to show population as a graphic display on the map. Let one Lego = 100,000 people. Here is an example of a city outside Texas: New York City has 8,175,000 people. Let’s round that to eight million two hundred thousand. How many Legos are needed to build a tower to show its population? For our population towers: we will have 1 Lego = 100,000. But how do we determine the number of Legos to show 8,200,000?

\[
8,200,000 \div 100,000 \text{ per Lego} = 82 \text{ Legos}
\]

Seattle = 608,000. Let’s round that to 600,000. Now, divide by 100,000. We need 6 Legos.

4. Look for patterns. In what region of Texas is each big city located? Which cities are east of IH-35? Which cities are west of IH-35? What physical features are near? What boundaries are near? In what ways are the cities connected to the history of Texas? Are the cities connected to one another? What other patterns can be found?
5. Next, put a vinyl spot on the site of the next six largest cities. Which are adjacent to the largest city towers? In what ways are they related to one another? Students can lie on the floor map to see the towers like a bar graph.

6. What is the order of cities from largest to smallest population? Which cities are located near one another? Which cities are more isolated? Which cities are located on or near a Texas boundary? Which regions of the state have the greatest population? The least population?

7. As an assessment, students can use graph paper to create a bar graph that shows the population of large Texas cities. One axis will have the regions/city names and one will have the population.

Extension
In the Settlement of Texas Towns lesson, students take a historical perspective on the population by recording census data about 20 Texas cities from 1850-2010. Students learn about old cities and newer cities, cities that no longer exist, and cities that have become very important today. Keep in mind the six large cities of Texas today.

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<thead>
<tr>
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<tbody>
<tr>
<td>1.</td>
<td>Tokyo, Japan</td>
<td>37,126,000</td>
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<td>2.</td>
<td>Jakarta, Indonesia</td>
<td>26,063,000</td>
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<td>3.</td>
<td>Seoul, South Korea</td>
<td>22,547,000</td>
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<td>4.</td>
<td>Delhi, India</td>
<td>22,242,000</td>
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<td>5.</td>
<td>Shanghai, China</td>
<td>20,860,000</td>
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<td>6.</td>
<td>Manila, Philippines</td>
<td>20,767,000</td>
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<td>7.</td>
<td>Karachi, Pakistan</td>
<td>20,711,000</td>
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<td>8.</td>
<td>New York, USA</td>
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<td>9.</td>
<td>Sao Paulo, Brazil</td>
<td>20,186,000</td>
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<td>10.</td>
<td>Mexico City, Mexico</td>
<td>19,463,000</td>
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<th>Rank</th>
<th>City</th>
<th>Population (2015)</th>
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<td>11.</td>
<td>Cairo, Egypt</td>
<td>17,816,000</td>
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<tr>
<td>12.</td>
<td>Beijing, China</td>
<td>17,311,000</td>
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<tr>
<td>13.</td>
<td>Osaka, Japan</td>
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</tr>
<tr>
<td>14.</td>
<td>Mumbai (Bombay), India</td>
<td>16,910,000</td>
</tr>
<tr>
<td>15.</td>
<td>Guangzhou, China</td>
<td>16,827,000</td>
</tr>
<tr>
<td>16.</td>
<td>Moscow, Russia</td>
<td>15,512,000</td>
</tr>
<tr>
<td>17.</td>
<td>Los Angeles, USA</td>
<td>14,900,000</td>
</tr>
<tr>
<td>18.</td>
<td>Calcutta, India</td>
<td>14,374,000</td>
</tr>
<tr>
<td>19.</td>
<td>Dhaka, Bangladesh</td>
<td>14,000,000</td>
</tr>
<tr>
<td>20.</td>
<td>Buenos Aires, Argentina</td>
<td>13,639,000</td>
</tr>
</tbody>
</table>

Resource #2: Population of 20 Largest Cities in the United States (2010 census)

<table>
<thead>
<tr>
<th>City and State</th>
<th>Pop (est) 2015</th>
<th>Rounded off Population data</th>
<th>Number of blocks (1 Lego block = 100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 New York, NY</td>
<td>8,175,000</td>
<td>8,200,000</td>
<td>82</td>
</tr>
<tr>
<td>2 Los Angeles, CA</td>
<td>3,792,000</td>
<td>3,800,000</td>
<td>38</td>
</tr>
<tr>
<td>3 Chicago, IL</td>
<td>2,695,000</td>
<td>2,700,000</td>
<td>27</td>
</tr>
<tr>
<td>4 Houston, TX</td>
<td>2,100,000</td>
<td>2,100,000</td>
<td></td>
</tr>
<tr>
<td>5 Philadelphia, PA</td>
<td>1,526,000</td>
<td>1,500,000</td>
<td></td>
</tr>
<tr>
<td>6 Phoenix, AZ</td>
<td>1,445,000</td>
<td>1,400,000</td>
<td></td>
</tr>
<tr>
<td>7 San Antonio, TX</td>
<td>1,327,000</td>
<td>1,300,000</td>
<td></td>
</tr>
<tr>
<td>8 San Diego, CA</td>
<td>1,307,000</td>
<td>1,300,000</td>
<td>13</td>
</tr>
<tr>
<td>9 Dallas, TX</td>
<td>1,197,000</td>
<td>1,200,000</td>
<td></td>
</tr>
<tr>
<td>10 San Jose, CA</td>
<td>945,000</td>
<td>900,000</td>
<td>9</td>
</tr>
<tr>
<td>11 Austin, TX</td>
<td>790,000</td>
<td>800,000</td>
<td></td>
</tr>
<tr>
<td>12 Jacksonville, FL</td>
<td>821,000</td>
<td>800,000</td>
<td></td>
</tr>
<tr>
<td>13 San Francisco, CA</td>
<td>805,000</td>
<td>800,000</td>
<td></td>
</tr>
<tr>
<td>14 Indianapolis, IN</td>
<td>820,000</td>
<td>800,000</td>
<td>8</td>
</tr>
<tr>
<td>15 Columbus, OH</td>
<td>787,000</td>
<td>800,000</td>
<td></td>
</tr>
<tr>
<td>16 Ft. Worth, TX</td>
<td>741,000</td>
<td>700,000</td>
<td></td>
</tr>
<tr>
<td>17 Charlotte, NC</td>
<td>731,000</td>
<td>700,000</td>
<td></td>
</tr>
<tr>
<td>18 Detroit, MI</td>
<td>713,000</td>
<td>700,000</td>
<td></td>
</tr>
<tr>
<td>19 El Paso, TX</td>
<td>649,000</td>
<td>600,000</td>
<td></td>
</tr>
<tr>
<td>20 Seattle, WA</td>
<td>608,000</td>
<td>600,000</td>
<td>6</td>
</tr>
</tbody>
</table>
Resource #3: Population of Largest Cities in Texas, 2010 Census  
(Texas is a BIG state in size and it has a BIG population)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Place name</th>
<th>2010 Census</th>
<th>Number of blocks 1 Lego block = 100,000</th>
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<tbody>
<tr>
<td>1</td>
<td>Houston</td>
<td>2,100,263</td>
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<tr>
<td>2</td>
<td>San Antonio</td>
<td>1,327,407</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dallas</td>
<td>1,197,816</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Austin</td>
<td>790,390</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Fort Worth</td>
<td>741,206</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>El Paso</td>
<td>649,121</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Arlington</td>
<td>365,438</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Corpus Christi</td>
<td>305,215</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Plano</td>
<td>259,841</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Laredo</td>
<td>236,091</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Lubbock</td>
<td>229,573</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Garland</td>
<td>226,876</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Irving</td>
<td>216,290</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Amarillo</td>
<td>190,695</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Grand Prairie</td>
<td>175,396</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Brownsville</td>
<td>175,023</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>McKinney</td>
<td>131,117</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Pasadena</td>
<td>149,043</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Frisco</td>
<td>116,989</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Mesquite</td>
<td>139,824</td>
<td></td>
</tr>
</tbody>
</table>
LEGEND-ARY SKILLS

Purpose
- To explain the meanings of symbols, text, colors, and scale on the map to describe physical features
- To apply knowledge of map symbols, colors, labels, and cartographic conventions to identify features of Texas
- To identify latitude and longitude lines used to mark boundaries of Texas and relative locations of places
- To introduce patterns of settlement, vegetation, rainfall, and topography on the landscape that define the regions of Texas

TEKS Standards

Grade 3 Social Studies
(5) Geography. The student understands the concepts of location, distance, and direction on maps and globes.

Grade 4 Social Studies
(8) Geography. The student understands the location and patterns of settlement and the geographic factors that influence where people live. The student is expected to (C) explain the geographic factors such as landforms and climate that influence patterns of settlement and the distribution of population in Texas, past and present.

(21) Social studies skills. The student applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including electronic technology. The student is expected to (C) organize and interpret information in outlines, reports, databases, and visuals, including graphs, charts, timelines, and maps.

Suggested Grade Level: 3rd – 5th

Suggested Time: 1-2 class periods

Materials: Giant Traveling Map of Texas, plastic chain, data sheet Measuring Distances

Instructional Background
Three activities give students practice using symbols, colors, labels, and cartographic conventions with the Giant Traveling Map of Texas. Activity A = symbols. Symbols include colors such as tan for higher elevations, dark green for lower elevations, and marbled color for mountains. Symbols are also points (star for capital, varied sized dots for cities), lines (river channels or borders), and polygons (shapes of population areas or state parks). Activity B = scale/measurement. Determine distance of 50 miles using scale bar and chains. Measure distances in Texas in increments of 50 miles. Activity C = Latitude and Longitude. Identify parallels and meridians relevant to Texas history and boundaries.
Student Activity/Assessment

Activity A: Symbols
Play a game of “Twister” to demonstrate knowledge of colors, labels, and symbols on map
1) Divide class into teams, with 7-8 students per team. Use the map legends to introduce the symbol for town. Put a cone on the state capital. Invite one team at a time to scoot around the map to locate a town that begins with the first letter of his/her name. Then encourage students to locate rivers, lakes, mountains, towns, scale bar, compass rose, title, and color variations.
2) Check knowledge with 5-6 Twister directions that encourage students to stretch as far as possible in identifying symbols. See sample instructions below. Rotate the teams on the map every 3-5 minutes to keep everyone engaged.
3) Plan for a second round of “Twister” with more attention to detail. For example, instead of locating any river, direct students to locate the mouth of a river flowing into the Gulf. Reinforce cardinal directions with instructions such as, locate a city in the northwest part of the state; a city and a canyon north of the state capital; a major highway and an international boundary crossing point south of the state capital. Note the use of text by finding two cities that begin with the same letter but have labels with different size print. What colors show places that are NOT in Texas?

Sample: TWISTER GAME STATEMENTS
Right foot: on a label written with all capital letters.
   Left hand: on a town that begins with the same letter as the student’s name
   Left foot: on a boundary with another state or country
   Right hand: on a body of water (lake, reservoir, gulf)
   Right foot: hilly or mountainous area
   Left hand/left foot: on two different colors of land
   Right foot/left foot: Stand on a label with letters not in a straight line.
   Right hand: on a symbol that shows direction
   Left hand/right hand: two cities on the same river

Activity B: Using Scale to Measure Distances
For this part of the Legend-ary Skills activity, pairs of students use plastic chains and the map scale to measure distances.
1) Lay the chain on top of the scale bar and put a marker, such as a piece of ribbon, on the chain link that is equal to 50 miles. Then, the partners will begin measuring distances on the map. What landmark is 50 miles from their current location? In what direction would a person travel to get there? Record results on the chart below. Replace any information in parentheses with actual information.
2) Then, look for places that are approximately 100 miles away, 200 miles, 350 miles, more than 500 miles. Record your findings. What is the greatest distance you can travel in a straight line from your
current location and still be in Texas? How far is it to the state capital, the nearest state border, the coastline, and the international border?

Sample Data Sheet: Using Scale to Measure Distances

<table>
<thead>
<tr>
<th>Current Location (city, town, county)</th>
<th>Distance in 50 mile segments (50 X 4 = 200 miles)</th>
<th>Direction</th>
<th>Landmark (such as a town, intersection of rivers, roads, mountain, canyon, state boundary, state park)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current location</td>
<td>50 miles</td>
<td>(west)</td>
<td>(Landmark)</td>
</tr>
<tr>
<td>50 miles</td>
<td></td>
<td></td>
<td>State Capital</td>
</tr>
<tr>
<td>(100 miles)</td>
<td></td>
<td></td>
<td>Gulf of Mexico</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>State border with another state</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>International border with Mexico</td>
</tr>
</tbody>
</table>

Activity C: Latitude & Longitude

Our “Shape-ly State” has several important lines of latitude and longitude that define its borders. These lines are also part of the information on the map. They are marked on the edges. The numbers on the sides of the map such as 32˚ 30’ (thirty-two degrees, thirty minutes) show latitude. The numbers on the top and bottom such as 98˚30’ (ninety-eight degrees, thirty minutes) show longitude.

*Latitude and Longitude* lines are imaginary lines that go around the Earth. Latitude lines go around in the same way as the equator. Longitude lines go from North Pole to South Pole. Together they make a grid so we can locate any place on any map or globe.

1) For this activity, the class will need four chains. The first part of the activity is about *latitude*. Select one student to stand on the boundary between Texas and New Mexico at 32˚. Have another student stand on the boundary between Texas and Louisiana at 32˚. Students hold the chain at the boundary and lay the chain across the state at 32˚. Here is the place where the boundary on the east goes north from the Sabine River to the Red River. On the west, it is part of the southern border of New Mexico. Can students identify at least five sites that are north of this latitude and five sites that are south of this latitude?

   Use another chain to mark the most northern latitude of the state. What is the latitude number?

2) Next, identify two lines of *longitude* that are important in knowing about Texas. Choose 4 additional students to mark the longitude lines. Across the top and bottom of the map, students will find the marking for 100˚. That is the eastern boundary of the Panhandle. To the west of 100˚ the climate becomes even drier, water is limited, scattered trees are small, and short prairie grasses feed fewer creatures. Mark this longitude line with a chain. Then, compare the number of towns to the west with the number of cities to the east. What pattern of settlement do students find?
Mark one more line of longitude - 103˚. It forms most of the boundary with New Mexico. Check out the inset map of the United States. How many states west of 103˚ have mostly straight line boundaries based on longitude (and latitude)? Which states east of 103˚ (as far east as the Mississippi River) have mostly straight line boundaries? Make a list of those. Locate them on a blank outline map of the United States. (Available on the TAGE website, under resources)

Assessment

Use the torn out map from the Shape-ly State lesson to add dotted lines to show and label the four lines of latitude and longitude in this lesson. Label rivers that form boundaries and adjacent states. Locate the state capital with correct symbol.

1) What are some reasons the cartographer (map maker) put the small map of the United States on the Texas map?
2) Make comparisons by estimating which distance is greater (then check answer with actual measurements):
   a. Austin to Oklahoma or to Mexican border
   b. Mouth of Sabine River to Galveston or to Longview
   c. El Paso to Brownsville or to Amarillo
   d. Guadalupe Mountains to Enchanted Rock or to Chisos Mountains in Big Bend National Park
Name: ____________________________

<table>
<thead>
<tr>
<th>Current Location (city, town, county)</th>
<th>Distance in 50 mile segments (50 x 4 = 200 miles)</th>
<th>Direction</th>
<th>Landmark (such as a town, intersection of rivers, roads, mountain, canyon, state boundary, state park)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
EXPLORING AND TRADING ACROSS TEXAS

European Explorers, Native American Traders, El Camino Real, Missions & Forts, Stage Routes, Railroads, Highways

Purpose:
- To identify historical routes of exploration and trade
- To recognize patterns of movement on the landscape over time
- To describe physical features in Texas that served as barriers and corridors for exploration, trade, and travel across Texas.
- To determine the physical characteristics of the landscapes that shape human patterns of movement over time

TEKS Standards

Grade 4 Social Studies
(2) History. The student understands the causes and effects of European exploration and colonization of Texas and North America. The student is expected to (B) identify the accomplishments and explain the impact of significant explorers, including Cabeza de Vaca; Francisco Coronado; and René Robert Cavelier, Sieur de la Salle, on the settlement of Texas; (C) explain when, where, and why the Spanish established settlements and Catholic missions in Texas as well as important individuals such as José de Escandón.

(8) Geography. The student understands the location and patterns of settlement and the geographic factors that influence where people live. The student is expected to (A) identify and explain clusters and patterns of settlement in Texas at different time periods such as prior to the Texas Revolution, after the building of the railroads, and following World War II; (C) explain the geographic factors such as landforms and climate that influence patterns of settlement and the distribution of population in Texas, past and present.

Grade 7 Social Studies
(1) History. The student understands traditional historical points of reference in Texas history. The student is expected to (A) identify the major eras in Texas history, describe their defining characteristics, and explain why historians divide the past into eras,

(8) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to (A) create and interpret thematic maps, graphs, charts, models, and databases representing various aspects of Texas during the 19th, 20th, and 21st centuries

(9) Geography. The student understands the location and characteristics of places and regions of Texas. The student is expected to (A) locate the Mountains and Basins, Great Plains, North Central Plains, and Coastal Plains regions and places of importance in Texas during the 19th, 20th, and 21st centuries such as major cities, rivers, natural and historic landmarks, political and cultural regions, and local points of interest; (B) compare places and regions of Texas in terms of physical and human characteristics.

Grade Levels: 4th-7th

Suggested Time: 1-2 class periods

Materials: Giant Traveling Map of Texas, chains, resource maps, vinyl markers, card holders, Texas Highway Maps for each group, cones for obstacles, maps (attached)
Instructional Information

1. Start by placing the beginning spot for each team on the map (see site noted in italics below)
2. Note where it is in relation to at least one other landmark students can identify. Assign two teams to the giant map at a time to trace the routes while other groups determine where their route will go. To highlight changes over time, try to assign groups in approximate chronological order or eras (possible divisions: before 1700, 1700s, 1800-1850, 1850-1910).
3. If appropriate for the students, simplify the lesson by selecting fewer routes over fewer time periods.
4. The Giant Traveling Map and the Resource Maps for each group use very different scales. Some discussion of map reading and scale may be useful. If we need to see details, we have to zoom in from our giant map.
5. Some groups have more than one route. Groups/Routes:
   - **Group #1** – *Spanish and French Explorers* 1500s, 1600s, 1700s (Coronado, de Vaca, la Salle), need 3 small pieces of chain (*Amarillo, Corpus Christi, Galveston*); use rivers as reference points
   - **Group #2** – Spanish *El Camino Real (Nacogdoches)* (#3 map) and Spanish Camino Real through El Paso (El Paso) Note: use some Spanish Missions as reference points
   - **Group #3** – *Native American Trade Routes: Comanche Trails* (Palo Duro Canyon) points may include *Big Spring, Chisos Mountains, Horsehead Crossing on Pecos*
   - **Group #4** – *Butterfield Stage Route/Santa Fe Trail* (Fort Stockton), Gainesville, Jacksboro may be useful reference points, El Paso
   - **Group #5** – *Railroads* major cities may be reference points

Student Activity/Assessment

1. Each team will use a chain to trace one of the historical routes of travel and trade on the Giant Traveling Map of Texas.
2. Begin by placing a vinyl spot marker on the Giant Map to locate a beginning site for each of the routes. Each team will study one route.
3. Study the resource maps for your group to find out more about the route your team will mark.
4. Identify 3-5 points on the routes and locate them on the Giant Map of Texas. The points will help you trace the route more accurately. Use the chain to mark the route.
5. When you are finished, look closely at the route. What are some physical features on the route? Which ones did travelers try to avoid and which ones were necessary for a successful journey? Some examples of places people avoided: rugged mountainous areas, places with no water (or too much water), places with thick vegetation, enemy territory. Some examples of places people found helpful for their journey: water wells, missions and forts for supplies, protected routes. Put a cone on two places to avoid.
Extension

1. When all routes have been marked on the map, use a map of Texas highways to locate the Interstates (IH-20, IH-30, IH-40, and IH-35). In what places do today’s highways use routes similar to those in other times in history? Was that coincidence or shaped by the physical geography of Texas?

2. Write a paragraph that describes the route your team traced. In what era was this route mostly used? How does it compare to highway routes today?

3. Challenge: Here are six places that were used as landmarks by two or more historical routes. Can you locate them and explain why they were so important? Mark the routes, identify five spots along the route (bend in river, mountain, town)
   a) Horsehead Crossing (Pecos), b) Big Spring, c) Chisos Mountains, d) Middle Concho River (Carlsbad), e) Eagles Pass, f) San Antonio de Bexar
Write a paragraph that describes the route your team traced. In what era was this route mostly used? How does it compare to highway routes today?
Resource Maps

Group #1 Explorers

https://www.nature.nps.gov/geology/parks/coro/images/coro_trail.jpg

Group #2 El Camino Real
El Camino Real de los Tejas National Historic Trail

Texas Missions

http://texasalmanac.com/sites/default/files/images/Missions.pdf

Spanish Missions and Presidios

Group #3 Comanche

http://www.texashighways.com/culture-lifestyle/item/7583-under-the-comanche-moon

http://www.nps.gov/bibe/learn/historyculture/images/comanche-trail.jpg
Lessons to Support the Giant Traveling Map of Texas

MAJOR BANDS OF THE COMANCHE TRIBE

Quohadi - Antelope
Noconi - Wanderers
Jupe - Timber People
Tenawa - Liver Eaters
Penateka - Honey Eaters
Kotsoteka - Buffalo Eaters
Yamparika - Yap Root Eaters

Legend
1. Parker's Fort
2. Ft. Houston
3. Bent's Fort
4. Antelope Hills
5. Adobe Walls
6. Camp Cooper
7. Fort Sill
Group #4 Stage Route/Santa Fe Trail

http://www.santafetrail.org/images/trail-map1.jpg

Lessons to Support the *Giant Traveling Map of Texas*

http://www.parks.ca.gov/pages/22491/images/routes_san_antonio_san_diego_butterfield_overland_mail_map.jpg

Lessons to Support the *Giant Traveling Map of Texas*

https://lib.utexas.edu/maps/historical/tex_fedforts_1848.jpg
Group #5 Railroads


https://www.tsl.texas.gov/sites/default/files/public/tslac/exhibits/railroad/fight/map7699-display.jpg
Lessons to Support the Giant Traveling Map of Texas

All Groups

http://geology.com/state-map/maps/texas-road-map.gif
Lessons to Support the Giant Traveling Map of Texas

RIVER BASIN MAP OF TEXAS

1996

BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN
University Station, Box X
Austin, Texas 78713-8924
(512) 471-1534


<table>
<thead>
<tr>
<th>River basins</th>
<th>Texas length (miles)</th>
<th>Texas area (sq mi)</th>
<th>Number of major reservoirs*</th>
<th>Conservation storage (acre ft)*</th>
<th>Storage (acre ft/sq mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazos</td>
<td>840</td>
<td>42,800</td>
<td>16</td>
<td>3,222,300</td>
<td>75</td>
</tr>
<tr>
<td>Canadian</td>
<td>280</td>
<td>12,700</td>
<td>2</td>
<td>569,900</td>
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</tr>
<tr>
<td>Colorado</td>
<td>560</td>
<td>39,893</td>
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<td>250</td>
<td>6,070</td>
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<td>420,000</td>
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<td>931,540</td>
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<td>Rod</td>
<td>986</td>
<td>32,823</td>
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<td>4,693,460</td>
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<td>14</td>
<td>6,060,710</td>
<td>368</td>
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</tbody>
</table>

*Data from Texas Water Development Board.
CREATURES GREAT AND SMALL

Purpose

- To identify common animals in Texas and their habitats
- To locate regions of the diverse habitats of the animals
- To determine animals and plants that are adjacent to one another
- To sort animals into categories using scientific classifications of order and class.

http://www.sheppardsoftware.com/content/animals/kidscorner/games/animalclassgame.htm

TEKS Standards

Grade 3 Science
(9) Organisms and environments. The student knows that organisms have characteristics that help them survive and can describe patterns, cycles, systems, and relationships within the environments. The student is expected to (A) observe and describe the physical characteristics of environments and how they support populations and communities within an ecosystem.

Grade 4 Social Studies
(7) Geography. The student understands the concept of regions. The student is expected to (A) describe a variety of regions in Texas and the United States such as political, population, and economic regions that result from patterns of human activity; (B) identify, locate, and compare the geographic regions of Texas (Mountains and Basins, Great Plains, North Central Plains, Coastal Plains), including their landforms, climate, and vegetation.

Grade 4 & 5 Science
(3) The study of elementary science includes planning and safely implementing classroom and outdoor investigations using scientific processes, including inquiry methods, analyzing information, making informed decisions, and using tools to collect and record information, while addressing the major concepts and vocabulary, in the context of physical, earth, and life sciences. Districts are encouraged to facilitate classroom and outdoor investigations for at least 50% of instructional time.

Grades 6 & 7 Science
(2) Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to (A) plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology and (C) collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers; (12) Organisms and environments. The student knows all organisms are classified into Domains and Kingdoms. Organisms within these taxonomic groups share similar characteristics which allow them to interact with the living and nonliving parts of their ecosystem. The student is expected to (C) recognize that the broadest taxonomic classification of living organisms is divided into currently recognized Domains

Grade Levels: 3rd – 7th
Suggested Time: 1-2 class periods

Materials: animal cards (20), card holders, drawing/writing paper, Resource: Animal Card Information (end of lesson), see also file Animal Images and Narratives.

Instructional Information
To understand the many different kinds of animals on earth, scientists categorized groups of animals with similar characteristics. Scientific information is split into a number of levels: Kingdom, Phylum, Class, Order, Family, Genus, Species (one silly way to remember this is King Phillip, Come Out For Goodness Sake!).

The organization of scientific information about a living thing is called a Taxonomy. Even if we do not know much about a particular animal, we can make comparisons to similar animals because of its classification in the taxonomy. So, for example, if you're talking about a Trumpeter Swan, we can learn from its taxonomy that it is a bird that lives in the water. Here is its scientific classification:

- **Kingdom**: animal (scientific name: Regnum animale)
- **Phylum**: animals with a backbone (scientific name: Chordata)
- **Class**: Bird (scientific name: Aves)
- **Order**: Water fowl (scientific name: Anseriformes)
- **Family**: Anatidae
- **Genus**: Cygnus
- **Species**: buccinators

Cards (20): The animals included on the cards are the following: (see separate file Lesson 7: Animal Images and Narratives): javelina, horned lizard, pronghorn, tarantula, mockingbird, roadrunner, coyote, bat, armadillo, bison, prairie dog, rattlesnake, hummingbird, red-tailed hawk, sandhill crane, longhorn, sea turtle, jackrabbit, bighorn sheep, monarch butterfly

Student Activity/Assessment
1. Divide the class into pairs for studying the animals, regions, and classifications. Number each group or have each group draw a number from an envelope with numbers on slips of paper.
2. Pairs then choose their first card. Locate a region of Texas that is a suitable habitat for the animal, based on information on the card and/or personal experience. Students then sit in that region. Read the information on the card and chose one piece of information to share with classmates later in the lesson.
3. Next, identify the scientific classification of the animal on the card. All the examples of Texas animals on the cards belong to the Animal Kingdom and the Chordata Phylum (animals with backbone). The next level of scientific classification of animals is Class. All the animals in this lesson are in one of these five classes: mammal, bird, fish, reptile, or amphibian. Review the distinctive characteristics of each class. Each student pair will identify the class of the animal on the card they have.
4. Teams will put the animal card in a holder and set it on the map to make it visible to other pairs.
5. Repeat the process with two additional cards for each group.

6. The instructor may demonstrate the process of the Trading Game using one or two animals commonly found in the region where students are located.

7. Next, Team 1 begins the trading game (or the instructor may choose another team). Each team seeks to trade cards with another team that has an animal card with either the same habitat/different classification OR the same classification/different habitat. Goal of game: Winners have three cards of animals in the same habitat with three different classifications OR three cards in the same classification in three different habitats.

8. The game begins by the first team asking, “Team __, do you have a creature that lives in a desert region?” or “Team __, do you have a mammal?” If yes, the second team gives their animal card to the first team. If no, they chose a card from the extras in the set. Then Team 2 asks another team for a card. No team may ask the same team to trade back the same card. As the game continues, a team may seek a trade with any team (except the one they have just traded).

**Alternative Activity for Younger Children**

When pairs of students have located the region where the animal lives, each group may act out the way the animal moves. Other teams can guess which animal they are describing. Cards may be placed on the map in holders as the animals are identified. Students then may share one important piece of information about their animal with classmates as an informal, formative assessment activity.

**Assessment**

As an informal, formative assessment activity, students then may share one important piece of information about their animal with classmates.

Students can draw their favorite Texas animal in its habitat and write 3 sentences about the animal. Older students may describe the habitat and region with particular details. They can explain adaptations of animals that maintain the balance of nature in the region.

**Resource: Animal Card Information**

**Armadillo**
The **ARMADILLO** is the official Texas state small mammal and is found all around the state. Bony plates cover its body like armor. Its name comes from a Spanish word meaning “little armored one”. The hard shell protects it from predators such as coyotes, bobcats, cougars, raccoons, and large hawks. The armadillo first came to Texas from Mexico. It lives in many different kinds of habitats such as grasslands, rain forests, and semi-arid lands. All of those habitats are found in Texas, but armadillos must share the land with people who also live in those areas. When armadillos are scared, they jump straight up. That’s when they are hit by cars and we see them dead along the road. Mostly, armadillos sleep during the day in their burrows. Early morning and evening they hunt for beetles, ants, termites, and other insects. An armadillo can eat 40,000 ants for one meal. They are not able to see very well so they use their sense of smell to find food. They do not like stinky smells, so if you want this odd creature to leave your yard, put moth balls or chilli powder around their burrows.
Black-tailed Jackrabbit
Across Texas and most of the West are JACKRABBITS with very large black-tipped ears and long, powerful back legs. These hares are different from cottontail rabbits in the garden. They are bigger (about 24 inches long) and are mostly grey with a small black stripe on their backs. They do not hop; they run. If there is danger, they run across the grassland in a zig zag pattern to escape predators and flash the white underside of their tail as a warning to other jackrabbits. They can run over 30 miles per hour and can swim. They eat different kinds of grasses and shrubs within about a half mile of their home. They sleep during the day in hollowed out places under shrubs. They do not have burrows and they do not hibernate. But, there is no such thing as a jackalope. It is a myth about a critter with a jackrabbit's body and an antelope's antlers. It could turn downright vicious when threatened yet sing a gentle song at night along with the best of the campfire cowboys. The story says two brothers went hunting. When they got home, they tossed a rabbit into the taxidermy shop and it slid right up to a pair of deer antlers. The brothers had an idea. They mounted it on the wall with the horns and the Herrick brothers started the legend of the jackalope.

Bison
The BISON, which is also called a buffalo, is the largest land animal in North America. Large herds of the huge, shaggy animals used to roam all across the Plains from North Dakota to Texas. Today they live in managed herds on protected lands. The Texas Bison Herd is found at Caprock Canyon State Park. They are very powerful animals with big humps over their shoulders and thick fur on most of their bodies. Buffalo may weigh up to 2000 pounds and that is a TON! They have short curved horns on their large heads. The horns can be used to sweep away the snow to eat grasses or as weapons to fight intruders. The loud crashing sound of two buffalo butting heads warns everyone to stay far away. Even if you do not hear them snorting, obey the warning signs. They can run more than 30 miles per hour. Buffalo have adapted to the extreme weather temperatures and fierce storms found on the Great Plains. They live in summer temperatures above 100 degrees and winter temperatures below 10 degrees. Calves are usually born in the spring when the weather is milder.

Coyote
COYOTES are found everywhere in the United States in both rural and urban areas. They may look like 30-pound dogs with German Shepherd type markings, bushy tail, and large ears, but are not pets. They survive by eating almost anything from rabbits, mice, gophers to snakes, fish, vegetables, and even dead animals they find. They get in trouble with ranchers when they attack calves, lambs, and other farm animals. They have strong vision and sense of smell for hunting. They make their home wherever they find a good hiding place except when they have cubs. Then they settle into caves or dens. In many places they have no natural enemies so their population grows and they come a problem to people. Coyotes often appear in stories as very savvy and clever animals. At night their howls can be heard from great distances, especially when several join together howling at the moon.

Desert Bighorn Sheep
DESERT BIGHORN SHEEP almost disappeared entirely from Texas. But, wildlife biologists brought desert bighorns from Arizona and Nevada to start a new herd in the Big Bend/Trans Pecos regions of southwest Texas in the 1990s. Today the spectacular animals have adapted to their new home and the herd is increasing. The males are easily recognized by their large horns that curve back over their ears and down and up past their cheeks into a full circle by the time they are 7-8 years old. The horns (weighing up to 30 pounds) are symbols of power in the herd. Bighorn sheep can run across the arid desert or up steep cliffs easily. They zig zag up the cliffs, jumping from one small ledge only 2 inches wide to another. That sounds scary! Their slightly concave shaped hoofs are well adapted to climbing with the sharp edges and the front slightly larger than the back part. They can also use their hooves and horns to remove spines from desert prickly pear cactus to get food and water. Coyotes and mountain lions are a danger, so the sheep usually stay together in groups of 10-20. Some groups are as large as 100 animals. Males may fight each other to get the attention of a particular female by butting heads, sometimes lasting as long as 24 hours. Thanks to wildlife conservation efforts, Texas has desert bighorn sheep.
Javelina
JAVELINA are members of the peccary family. In Texas they are found in the semi-arid parts of the state, especially in the Big Bend area along the Rio Grande. They travel in small family herds. In the hot summer, they mainly move around at night and are considered nocturnal animals. They often eat prickly pear cacti, mesquite beans, and insects. They also like garbage, pet food, and some tulip bulbs found around people’s houses. They become a problem when their habitat is too close to humans. They have poor eyesight and when cornered, they defend themselves with sharp canine teeth, or “tusks”. They have a reputation of being quite ferocious. They often sleep in caves or cave-like places, but occasionally they settle into crawl spaces under people’s homes. They are a problem to landowners because they damage yards and sprinkler systems when they “root” for their food and also may attack pets. People can legally hunt javelinas in Texas.

Mexican Free-Tail Bat
MEXICAN FREE-TAILED BATS are the official Texas state flying mammal. These furry, medium-sized bats are reddish to dark brown in color. The largest number of them in Texas live in a colony in Bracken Cave near San Antonio. The most famous colony lives under the Congress Street Bridge over the Colorado River in Austin. Every spring and summer evening nearly 2 million of these urban-dwelling bats leave the bridge in waves to search for insects. They will eat nearly 20,000 pounds of insects. Thousands of visitors watch them depart each evening. They can even be seen on radar. During the day the bats and babies hang from crevices in caves, or under bridges. These gentle and sophisticated animals help take care of the environment, but they do not like people to touch them. https://www.youtube.com/watch?v=KL7RKPhPxAE 0.

Mockingbird
The northern MOCKINGBIRD, the official Texas state bird, enjoys the environment of Texas and Florida. A mockingbird can sing up to 200 songs, often “mocking” or repeating sounds of other birds, insects, or even mechanical sounds. Some can even sound like a barking dog as they sing throughout the day. We often see them around our homes, city parks, along road sides and in farmlands. They like grassy areas with thickets but need taller trees for perching and surveying the landscape. They stay in the same environment year round. They eat insects around the yard such as ants, beetles, bees, and grasshoppers but they also like fruits on bushes and nearby water. Seeds, not so much.

Monarch Butterfly
The beautiful orange and black MONARCH BUTTERFLY is the state insect of Texas. Each spring and fall large clouds of monarchs migrate through Texas on their 3000 mile journey between Canada and Mexico. Shorter days and cooler temperatures spark the autumn migration from the Northern Plains states. Each day they join others traveling southward on the winds. At night they find a tree or bush where they can rest and keep each other warm before continuing south the next day. They may travel 50-100 miles a day in September and October. Then, these 4th generation butterflies go back to the same trees their great, great grandparents left in the spring of the same year. Such an amazing feat! They spend the winter in the El Rosario Sanctuary in particular fir trees in the mountains of Mexico west of Mexico City. In March, the new monarchs begin the trek north again with longer days and warmer temperatures. You can monitor the sites of the nightly roosts in spring and fall with the monarch migration website. New generations of monarchs will hatch from eggs deposited on milkweed plants. The adult summer butterflies have a short life and must escape predators. One defense is their bright orange and black wings that are poisonous. You are likely to see the Monarch Migration in most of Texas, except in the very eastern regions of the state.

Prairie Dog
Black-tailed PRAIRIE DOGS are not really dogs, but rodents like rats, mice, squirrels, and gophers. They live together in large colonies on the grasslands. They live in burrows underground that are connected by a large number of tunnels. These tunnels lead to special “rooms” for the babies, for storage of food, and to escape routes. They build their burrows so that they stay dry, even when it rains. You can easily find a prairie dog town by the mounds of dirt they dig out of the burrows and pile by their front door. They take turns standing on the mounds...
watching for danger and bark a warning to others before scampering back inside. That barking sound may be why people named them prairie dogs. Their constant digging loosens the soil for the prairie grasses to grow well. They eat the tops of the grass so that sweet tender new grass can grow. That’s one of the favorite foods of buffalo.

**Pronghorn Antelope**
The PRONGHORN ANTELOPE is one of the fastest land animals on Earth, except for the cheetah, and they live on the Great Plains. They can run as fast as 50 miles per hour, but are also great long distance runners at sustained speeds up to 30 miles per hour. They like to eat grassy plants and sagebrush found on the West Texas grasslands and high plains and the Big Bend region of South Texas. These reddish brown animals live together in small herds. Coyotes and wolves attack them, but a greater threat to them is human activities, especially fences keeping them from food. Even though they could jump fences to find food, these 4-5 foot tall animals either stop or try crawl UNDER fences. Then, they lose their best defense of running fast to escape coyotes. The live together in herds and when startled, they raise the hair on their rumps to display a white warning patch that can be seen for miles. Otherwise, they are reddish brown with white stomachs and wide, white stripes on their throats. Their name comes from the shape of the horns. The horns have two “prongs;” one curves forward and the other prong curves backwards. People report pronghorns racing against cars, and winning! Then, they seem to celebrate their victory by running in front of the car and giving a snort and shake of their heads.

**Red-tailed Hawk**
RED-TAILED HAWKS soar high above the deserts, grasslands, farm fields, pastures, and woodlands of North America during the day. Their keen eyesight lets them find mice and other small rodents scampering through the grass. Hawks swoop down to snatch them for dinner using their powerful talons. These birds of prey also eat some other birds, reptiles, insects, or fish as part of the balance of nature. They build nests in high places where they can see great distances. You might see a hawk’s nest in a tree or on the edge of a cliff or even at the top of a tall cactus. Some balance their 3-foot wide nests on tops of power poles. That could be dangerous in storms or if they had to fight off an invading owl. When the young ones hatch, both parents care for them at first. But in 6-7 weeks, the chicks are practicing flying and hunting on their own. Soon their tail feathers will become copper-colored and their wings will spread nearly 4 feet. They may live for 12 years or more in the wild.

**Ridley Sea Turtle**
The state sea turtle is a Kemp’s RIDLEY SEA TURTLE. It has a top shell that is 24-28 inches across and weighs about a 100 pounds. Biologists say that makes it one of the smallest marine turtles, but 100 is as big as the tire on my car! An unusual activity of these sea turtles is the way they lay their eggs. During a particular day (that they decide somehow) at a particular beach, thousands of females come out of the shallow, sandy ocean in organized waves to bury about 100 eggs each. It is called *arribada* that means *arrival* in Spanish. Then the females go back to the ocean. In about 55 days, the hatchlings dig their way out of the shells and head for the ocean at night. Not all of them survive. Those that do survive are often accidentally caught in fishing nets. Others are prey for other creatures. Most the sea turtles lay eggs on particular beaches in Mexico, but some choose Padre Island. One of their favorite foods is crabs. These grey-green shelled sea turtles use their powerful jaws to crunch the shells of crabs. They also like clams and jellyfish. They are an endangered species but environmentalists are working with people from the United States and Mexico to protect them.

**Roadrunner**
The greater ROADRUNNER is a rather odd bird that mostly runs on the ground even though it can fly for very short distances. It lives in desert and semi-arid areas and eats insects, mice, spiders, lizards, birds, and even rattlesnakes. They have a special way to catch rattlesnakes, using their wings like a bullfighter uses his red cape to attract the snake. When the snake tries to strike, the roadrunner grabs the tail and whips it around and around, hitting it on the ground until it is dead. The roadrunner makes its nest in shrubs and has an unusual idea about home decorating. Its nest is often made of sticks and grasses with added décor such as feathers, snake skins, and even dry manure. They can run nearly 20 miles per hour, but they do not really call out “beep beep” when chased by a coyote.
**Ruby Throated Hummingbird**
The small RUBY-THROATED HUMMINGBIRDS often found in Texas, are only about 3 inches long, and weigh less than a nickel. They mostly live near edges of forests or orchards or meadows, but can live near backyard gardens or wooded parks. Their long beaks let them reach into flowers to drink the rich nectar with their fringed, forked tongues. Hummingbirds have a keen eyesight for their favorite colors of red and orange. People often plant special flowers like hollyhocks, geraniums, lupines, and petunias that have red or orange blossoms to attract hummingbirds. They also may have hummingbird feeders filled with a mixture of sugar and water for the little birds. Hummingbirds seem to like the sound and sight of gently moving water for their baths. They can also eat insects when flowers are not blooming. They may be tiny, but they are also mighty. They can keep larger birds away from their territory. Amazingly, these tiny birds migrate more than 20 hours non-stop across the Gulf of Mexico to the Texas coast and then to Mexico. Some breeds travel all the way from Mexico to Canada. They can travel 25-30 miles per hour with 50-80 wing flaps per second. That takes 250 breaths per minute! No wonder they are hungry enough to eat 8 times every hour.

**Sandhill Crane**
SANDHILL CRANES may be the oldest known bird species in North America and they migrate to Texas in the winter. The birds have bodies that are about 40 inches long birds and a wingspan of 5-6 feet. They migrate from Canada and Alaska to the Southwest each with more than1/2 million of them traveling to the wetlands around Muleshoe in West Texas. In the past, large groups have stayed in the Anahuac National Wildlife Refuge east of Houston. Sandhill cranes are usually gray with a crimson red crown on their heads. They eat whatever they find in the freshwater around them—plants, grains, mice, insects, or even tubers buried in the soft mud. They may spread the mud on their feathers as they groom themselves creating a kind of mud bath. When they look for a mate, they often through back their heads and sing a duet in a passionate coordinated song. Cranes also dance, run, leap high in the air and otherwise cavort around—not only during mating but all year long. [https://www.youtube.com/watch?v=api8-IqgrPc](https://www.youtube.com/watch?v=api8-IqgrPc)

**Tarantula**
A TARANTULA is actually a kind of spider that has been around for millions of years. The species is probably as old as the dinosaurs. These big, hairy spiders live everywhere in Texas and can be seen walking around slowly on sidewalks and roadsides or in the grass around dawn or dusk. They do not spin webs, but live in burrows and grab their prey with their 8 legs. Mostly they eat insects, such as crickets and beetles, and occasional frogs or mice. What makes them so scary is not their bite, but how big and hairy they are. They can be as big as a plate (9-10 inches) and so people can see them walking on the road ahead of a car. Sometimes large groups of males join together and will almost cover the road for several miles as they search for a girlfriend.

**Texas Horned Lizard**
TEXAS HORNED LIZARDS are the official state reptile and are often called horny toads. They look fearsome with two large horns on their heads, dagger-like spikes and rows of spiky scales on the side of their body. They live all over Texas, especially in dry and semi-arid landscapes with cactus, bunched grass, and loose soil where they can bury themselves to escape the Texas summer heat. One of their favorite foods is red ants! Often they will be found near the red ant mound with the loose soil. Both the red ants, also called harvester ants, and the “horney toad” love temperatures over 90 degrees. They are usually grey or brown with darker spots along the small body, 3.5 to 5 inches long. Texas Horned Lizards have some amazing defenses! Its horn appearance and color helps it to blend into the dry environment. Its horns may make it less tasty for predators. It can also inflate itself to a look much larger. But the weirdest defense is its ability to shoot a stream of blood from its eye (actually, its eyelid). Don’t mess with horny toads!

**Texas Longhorn**
Texas designated the iconic longhorn as the official state large mammal in 1995. The mere sight of a longhorn brings to mind the old west, especially on the Great Plains. Longhorn cattle are hardy animals that can go long distances without water and live on the sparse, tough grasses they find on the plains or whatever is available
Lessons to Support the Giant Traveling Map of Texas

Texas Alliance for Geographic Education | http://www.geo.txstate.edu/tage/ | Rev. 04.2016 | Page 43

around them. They can swim rivers and tolerate desert sun and winter snow. The horns are typically about 5 feet across, but some bulls have horns more than 7 feet across. Longhorns are surprisingly gentle creatures for ranchers to manage, if they are treated well. They also regularly produce healthy calves that helps the rancher increase the herd. By the 1920's, the Texas longhorn was on its way to extinction. Due to efforts by Texas Forest Service personnel collecting small herds and placing them in Texas state parks, this unique breed was preserved.

**Western Diamond-Back Rattlesnake**

DIAMONDBACK RATTLESNAKES live in all kinds of habitats – grasslands, deserts, forests, and along the coast. They have a thick body and a triangular shaped head with a diamond pattern on their skins. On hot summer days, this reptile may be coiled in a shady spot under trees, brush, or rocks so it does not get too hot. On cool days, it looks for warm rocks and roads. It also may hide in burrows made by other animals, such as prairie dogs. It does not like to be disturbed. Its defense is to rattle its tail and strike with its fangs. The venom from the fangs causes swelling and pain to people, horses, and cattle. Listen for the warning sound of the rattle that shakes as many as 60 times in one second. The rattle is made up of a protein called keratin, just like your fingernails. A new segment is added each time a rattlesnake sheds its skin. Snakes shed their skins as they grow and these snakes can grow up to 7 feet long. A western diamondback rattlesnake eats small animals like rabbits, mice, lizards, or gophers. Larger animals such as hawks or coyotes eat snakes.
Armadillo

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Hawk – Red Tailed

https://tpwd.texas.gov/calendar/galveston-island/images/Sky.PNG

RED-TAILED HAWKS soar high above the deserts, grasslands, farm fields, pastures, and woodlands of North America during the day. Their keen eyesight lets them find mice and other small rodents scampering through the grass. Hawks swoop down to snatch them for dinner using their powerful talons. These birds of prey also eat some other birds, reptiles, insects, or fish as part of the balance of nature. They build nests in high places where they can see great distances. You might see a hawk’s nest in a tree or on the edge of a cliff or even at the top of a tall cactus. Some balance their 3-foot wide nests on tops of power poles. That could be dangerous in storms or if they had to fight off an invading owl. When the young ones hatch, both parents care for them at first. But in 6-7 weeks, the chicks are practicing flying and hunting on their own. Soon their tail feathers will become copper-colored and their wings will spread nearly 4 feet. They may live for 12 years or more in the wild.
TEXAS HORNED LIZARDS are the official state reptile and are often called horny toads. They look fearsome with two large horns on their heads, dagger-like spikes and rows of spiky scales on the side of their body. They live all over Texas, especially in dry and semi-arid landscapes with cactus, bunched grass, and loose soil where they can bury themselves to escape the Texas summer heat. One of their favorite foods is red ants! Often they will be found near the red ant mound with the loose soil. Both the red ants, also called harvester ants, and the “horny toad” love temperatures over 90 degrees. They are usually grey or brown with darker spots along the small body, 3.5 to 5 inches long. Texas Horned Lizards have some amazing defenses! Its horny appearance and color helps it to blend into the dry environment. Its horns may make it less tasty for predators. It can also inflate itself to a look much larger. But the weirdest defense is its ability to shoot a stream of blood from its eye (actually, its eyelid). Don’t mess with horny toads!
Hummingbird, Ruby-Throated

![Hummingbird, Ruby-Throated](http://static.inaturalist.org/photos/2379300/medium.JPG?1442173065)

The small RUBY-THROATED HUMMINGBIRDS often found in Texas, are only about 3 inches long, and weigh less than a nickel. They mostly live near edges of forests or orchards or meadows, but can live near backyard gardens or wooded parks. Their long beaks let them reach into flowers to drink the rich nectar with their fringed, forked tongues. Hummingbirds have a keen eyesight for their favorite colors of red and orange. People often plant special flowers like hollyhocks, geraniums, lupines, and petunias that have red or orange blossoms to attract hummingbirds. They also may have hummingbird feeders filled with a mixture of sugar and water for the little birds. Hummingbirds seem to like the sound and site of gently moving water for their baths. They can also eat insects when flowers are not blooming. They may be tiny, but they are also mighty. They can keep larger birds away from their territory. Amazingly, these tiny birds migrate more than 20 hours non-stop across the Gulf of Mexico to the Texas coast and then to Mexico. Some breeds travel all the way from Mexico to Canada. They can travel 25-30 miles per hour with 50-80 wing flaps per second. That takes 250 breaths per minute! No wonder they are hungry enough to eat 8 times every hour.
Across Texas and most of the West are JACKRABBITS with very large black-tipped ears and long, powerful back legs. These hares are different from cottontail rabbits in the garden. They are bigger (about 24 inches long) and are mostly grey with a small black stripe on their backs. They do not hop; they run. If there is danger, they run across the grassland in a zig zag pattern to escape predators and flash the white underside of their tail as a warning to other jackrabbits. They can run over 30 miles per hour and can swim. They eat different kinds of grasses and shrubs within about a half mile of their home. They sleep during the day in hollowed out places under shrubs. They do not have burrows and they do not hibernate. But, there is no such thing as a jackalope. It is a myth about a critter with a jackrabbit's body and an antelope's antlers. It could turn downright vicious when threatened yet sing a gentle song at night along with the best of the campfire cowboys. The story says two brothers went hunting. When they got home, they tossed a rabbit into the taxidermy shop and it slid right up to a pair of deer antlers. The brothers had an idea. They mounted it on the wall with the horns and the Herrick brothers started the legend of the jackalope.
Javelina


JAVELINA are members of the peccary family. In Texas they are found in the semi-arid parts of the state, especially in the Big Bend area along the Rio Grande. They travel in small family herds. In the hot summer, they mainly move around at night and are considered nocturnal animals. They often eat prickly pear cacti, mesquite beans, and insects. They also like garbage, pet food, and some tulip bulbs found around people’s houses. They become a problem when their habitat is too close to humans. They have poor eyesight and when cornered, they defend themselves with sharp canine teeth, or “tusks”. They have a reputation of being quite ferocious. They often sleep in caves or cave-like places, but occasionally they settle into crawl spaces under people’s homes. They are a problem to landowners because they damage yards and sprinkler systems when they “root” for their food and also may attack pets. People can legally hunt javelinas in Texas.
Texas designated the iconic LONGHORN as the official state large mammal in 1995. The mere sight of a longhorn brings to mind the old west, especially on the Great Plains. Longhorn cattle are hardy animals that can go long distances without water and live on the sparse, tough grasses they find on the plains or whatever is available around them. They can swim rivers and tolerate desert sun and winter snow. The horns are typically about 5 feet across, but some bulls have horns more than 7 feet across. Longhorns are surprisingly gentle creatures for ranchers to manage, if they are treated well. They also regularly produce healthy calves that helps the rancher increase the herd. By the 1920's, the Texas longhorn was on its way to extinction. Due to efforts by Texas Forest Service personnel collecting small herds and placing them in Texas state parks, this unique breed was preserved.
Mockingbird


The northern MOCKINGBIRD, the official Texas state bird, enjoys the environment of Texas and Florida. A mockingbird can sing up to 200 songs, often “mocking” or repeating sounds of other birds, insects, or even mechanical sounds. Some can even sound like a barking dog as they sing throughout the day. We often see them around our homes, city parks, along road sides, and in farmlands. They like grassy areas with thickets but need taller trees for perching and surveying the landscape. They stay in the same environment year round. They eat insects around the yard such as ants, beetles, bees, and grasshoppers but they also like fruits on bushes and nearby water.
Monarch Butterfly

The beautiful orange and black MONARCH BUTTERFLY is the state insect of Texas. Each spring and fall large clouds of monarchs migrate through Texas on their 3000 mile journey between Canada and Mexico. Shorter days and cooler temperatures spark the autumn migration from the Northern Plains states. Each day they join others traveling southward on the winds. At night they find a tree or bush where they can rest and keep each other warm before continuing south the next day. They may travel 50-100 miles a day in September and October. Then, these 4th generation butterflies go back to the same trees their great, great grandparents left in the spring of the same year. Such an amazing feat! They spend the winter in the El Rosario Sanctuary in particular fir trees in the mountains of Mexico west of Mexico City. In March, the new monarchs begin the trek north again with longer days and warmer temperatures. You can monitor the sites of the nightly roosts in spring and fall with the monarch migration website. New generations of monarchs will hatch from eggs deposited on milkweed plants. The adult summer butterflies have a short life and must escape predators. One defense is their bright orange and black wings that are poisonous. You are likely to see the Monarch Migration in most of Texas, except in the very eastern regions of the state.
Prairie Dog

http://tpwd.texas.gov/huntwild/wild/images/mammals/praridog.jpg

Black-tailed PRAIRIE DOGS are not really dogs, but rodents like rats, mice, squirrels, and gophers. They live together in large colonies on the grasslands. They live in burrows underground that are connected by a large number of tunnels. These tunnels lead to special “rooms” for the babies, for storage of food, and to escape routes. They build their burrows so that they stay dry, even when it rains. You can easily find a prairie dog town by the mounds of dirt they dig out of the burrows and pile by their front door. They take turns standing on the mounds watching for danger and bark a warning to others before scampering back inside. That barking sound may be why people named them prairie dogs. Their constant digging loosens the soil for the prairie grasses to grow well. They eat the tops of the grass so that sweet tender new grass can grow. That’s one of the favorite foods of buffalo.
Pronghorn Antelope

The PRONGHORN ANTELOPE is one of the fastest land animals on Earth, except for the cheetah, and they live on the Great Plains. They can run as fast as 50 miles per hour, but are also great long distance runners at sustained speeds up to 30 miles per hours. They like to eat grassy plants and sagebrush found on the West Texas grasslands and high plains and the Big Bend region of South Texas. These reddish brown animals live together in small herds. Coyotes and wolves attack them, but a greater threat to them is human activities, especially fences keeping them from food. Even though they could jump fences to find food, these 4-5 foot tall animals either stop or try crawl UNDER fences. Then, they lose their best defense of running fast to escape coyotes. The live together in herds and when startled, they raise the hair on their rumps to display a white warning patch that can be seen for miles. Otherwise, they are reddish brown with white stomachs and wide, white stripes on their throats. Their name comes from the shape of the horns. The horns have two “prongs;” one curves forward and the other prong curves backwards. People report pronghorns racing against cars, and winning! Then, they seem to celebrate their victory by running in front of the car and giving a snort and shake of their heads.
Rattlesnake – Western Diamondback

DIAMONDBACK RATTLESNAKES live in all kinds of habitats – grasslands, deserts, forests, and along the coast. They have a thick body and a triangular shaped head with a diamond pattern on their skins. On hot summer days, this reptile may be coiled in a shady spot under trees, brush, or rocks so it does not get too hot. On cool days, it looks for warm rocks and roads. It also may hide in burrows made by other animals, such as prairie dogs. It does not like to be disturbed. Its defense is to rattle its tail and strike with its fangs. The venom from the fangs causes swelling and pain to people, horses, and cattle. Listen for the warning sound of the rattle that shakes as many as 60 times in one second. The rattle is made up of a protein called keratin, just like your fingernails. A new segment is added each time a rattlesnake sheds its skin. Snakes shed their skins as they grow and these snakes can grow up to 7 feet long. A western diamondback rattlesnake eats small animals like rabbits, mice, lizards, or gophers. Larger animals such as hawks or coyotes eat snakes.
The greater ROADRUNNER is a rather odd bird that mostly runs on the ground even though it can fly for very short distances. It lives in desert and semi-arid areas and eats insects, mice, spiders, lizards, birds, and even rattlesnakes. They have a special way to catch rattlesnakes, using their wings like a bullfighter uses his red cape to attract the snake. When the snake tries to strike, the roadrunner grabs the tail and whips it around and around, hitting it on the ground until it is dead. The roadrunner makes its nest in shrubs and has an unusual idea about home decorating. Its nest is often made of sticks and grasses with added décor such as feathers, snake skins, and even dry manure. They can run nearly 20 miles per hour, but they do not really call out “beep beep” when chased by a coyote.
Lessons to Support the *Giant Traveling Map of Texas*

**Sandhill Crane**

[Image of a Sandhill Crane in flight]

[Sandhill Crane Image Source](http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/whooper-watch/images/sandhill1a.jpg)

SANDBILL CRANES may be the oldest known bird species in North America and they migrate to Texas in the winter. The birds have bodies that are about 40 inches long birds and a wingspan of 5-6 feet. They migrate from Canada and Alaska to the Southwest each with more than1/2 million of them traveling to the wetlands around Muleshoe in West Texas. In the past, large groups have stayed in the Anahuac National Wildlife Refuge east of Houston. Sandhill cranes are usually gray with a crimson red crown on their heads. They eat whatever they find in the freshwater around them – plants, grains, mice, insects, or even tubers buried in the soft mud. They may spread the mud on their feathers as they groom themselves creating a kind of mud bath. When they look for a mate, they often through back their heads and sing a duet in a passionate coordinated song. Cranes also dance, run, leap high in the air and otherwise cavort around— not only during mating but all year long.

[Link to YouTube video](https://www.youtube.com/watch?v=api8-IqqrPc)

Ridley Sea Turtle

The state sea turtle is a Kemp’s RIDLEY SEA TURTLE. It has a top shell that is 24-28 inches across and weighs about a 100 pounds. Biologists say that makes it one of the smallest marine turtles, but 100 is as big as the tire on my car! An unusual activity of these sea turtles is the way they lay their eggs. During a particular day (that they decide somehow) at a particular beach, thousands of females come out of the shallow, sandy ocean in organized waves to bury about 100 eggs each. It is called arribada that means arrival in Spanish. Then the females go back to the ocean. In about 55 days, the hatchlings dig their way out of the shells and head for the ocean at night. Not all of them survive. Those that do survive are often accidentally caught in fishing nets. Others are prey for other creatures. Most sea turtles lay eggs on particular beaches in Mexico, but some choose Padre Island. One of their favorite foods is crabs. These grey-green shelled sea turtles use their powerful jaws to crunch the shells of crabs. They also like clams and jellyfish. They are an endangered species but environmentalists are working with people from the United States and Mexico to protect them.
A TARANTULA is actually a kind of spider that has been around for millions of years. The species is probably as old as the dinosaurs. These big, hairy spiders live everywhere in Texas and can be seen walking around slowly on sidewalks and roadsides or in the grass around dawn or dusk. They do not spin webs, but live in burrows and grab their prey with their 8 legs. Mostly they eat insects, such as crickets and beetles, and occasional frogs or mice. What makes them so scary is not their bite, but how big and hairy they are. They can be as big as a plate (9-10 inches) and so people can see them walking on the road ahead of a car. Sometimes large groups of males join together and will almost cover the road for several miles as they search for a girlfriend.
SHOW ME TEXAS: CULTURAL GEOGRAPHY

Purpose

- To locate sites/events in Texas that represent the diversity of human cultures in Texas.
- To describe human activities in relation to particular physical features, habitats, and environments across regions of Texas
- To use the technology of scanning QR codes to acquire information from visual and oral resources
- To select and evaluate appropriate digital resources for understanding human/environment interactions and communicating results

TEKS Standards

Grade 4 Social Studies

(19) Culture. The student understands the contributions of people of various racial, ethnic, and religious groups to Texas. The student is expected to (A) identify the similarities and differences among various racial, ethnic, and religious groups in Texas.

(21) Social studies skills. The student applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including electronic technology. The student is expected to (A) differentiate between, locate, and use valid primary and secondary sources such as computer software; interviews; biographies; oral, print, and visual material; documents; and artifacts to acquire information about the United States and Texas; (B) analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions; (C) organize and interpret information in outlines, reports, databases, and visuals, including graphs, charts, timelines, and maps;

Grade 7 Social Studies

(9) Geography. The student understands the location and characteristics of places and regions of Texas. The student is expected to (B) compare places and regions of Texas in terms of physical and human characteristics.

(19) Culture. The student understands the concept of diversity within unity in Texas. The student is expected to (A) explain how the diversity of Texas is reflected in a variety of cultural activities, celebrations, and performances; (B) describe how people from various racial, ethnic, and religious groups attempt to maintain their cultural heritage while adapting to the larger Texas culture; (C) identify examples of Spanish influence and the influence of other cultures on Texas such as place names, vocabulary, religion, architecture, food, and the arts

Technology

(2) Through the study of technology applications, students make informed decisions by understanding current and emerging technologies, including technology systems, appropriate digital tools, and personal learning networks. As competent researchers and responsible digital citizens, students use creative and computational thinking to solve problems while developing career and college readiness skills.

(2) Communication and collaboration. The student collaborates and communicates both locally and globally to reinforce and promote learning. The student is expected to (A) participate in personal learning networks to collaborate with peers, experts, or others using digital tools such as blogs, wikis,
audio/video communication, or other emerging technologies;
(3) Research and information fluency. The student acquires, analyzes, and manages content from digital resources. The student is expected to (C) select and evaluate various types of digital resources for accuracy and validity; and (D) process data and communicate results.

**Grade Levels:** 3rd-7th

**Class Time:** 1 -2 class periods

**Materials:** Giant Traveling Map of Texas, cards with sites of cultural activities, card holders, smartphone (or other devices that can scan QR codes), a recording sheet (in what region is it located- see lesson 2 regions)

**Instructional Background**
Cultural geography focuses on the activities of people and their activities in particular places. People adapt to their environment and often make changes on the landscape. These cultural markers show us what is important to people, their cultural practices, values, beliefs, and visions. They remind people of the past and look toward the future. The sites listed below are home to activities that shape the lives of Texans. They show Texas history, economic growth, political life, applications of science and technology, artistic or physical skills, and the connection to the land and creatures that share the environment.

Colleagues across the state suggested places for us to add to our study with the Giant Traveling Map of Texas. We selected places that show a variety of activities and people across the many regions of our state. Items have QR codes linked to videos appropriate to students in 4th – 7th grades.

Some important sites were not selected for the lesson for several reasons. There may have been too many sites in one area or the site lacked appropriate video links. Sites that are well-known and always included in such activities were left off in order to broaden student knowledge of Texas.

If you wish to make more cards and more QR codes, see [http://www.qrstuff.com/](http://www.qrstuff.com/). All you need is the URL of a website. The site prompts you to put that into a window and it produces the QR code preview. Download or print.

**Student Activity/Assessment**
1. Pairs of students will select a card about a cultural site. They locate the place on the map and put the card on the map in a card holder
2. Next, scan the QR code on the back of the card. It will take the students to a website/video/still images that show the site and describe activities that take place there.
3. Learn about the site and the activity. Review the information with each other.
4. When pairs have information about one site, they will join with another team to share information and make comparisons.
5. Rotate the pairs so that each learns about at least three other sites.
6. The oral assessment may be followed with individual writing about the site, drawing a picture of the site, or including the site in a digital presentation developed by the class for a wider audience.
Extension
Choose three cards showing different aspects of Texas culture. Explore the questions below. Then, act as a guide on the map with students in another class. Show them some cultural sites in Texas and explain why they are located in that area.

a. At that site how do people, animals, and the environment work together?
b. What happens at that site between people and the environment?
c. What if we mixed up the cards and imagined the structure/activity/event at a different site?
d. In what ways would the human activity and the environment NOT fit as well? Could you even have the same structure/activity/event at a different site?

Another Extension Example: Compare the McDonald Observatory in Ft. Davis and State Capital in Austin.

a) What do people do there? At the Observatory people study the stars. At the State Capital, people meet together to govern our state.
b) Why is it a good location for that activity?
The Fort Davis Observatory is located in an area with low population. The isolated place has low amounts of artificial lights to interfere with the dark sky. People can study stars (astronomy) best when they can observe them without distractions. It is also located in the Davis Mountains State Park to give a better view without other objects in the way.
The State Capital is located in central Texas with highways and airports nearby. It is only a couple hours away from large urban centers of the state. It is easy to travel there to govern our state. It has many different kinds of jobs for people to support the work of governing Texas. People find jobs in government, business, education, health care, transportation, technology, and entertainment.
c) In what ways does the human activity affect the animals and physical environment?
At the McDonald Observatory in Fort Davis, the mountains are home to many animals but not many people. The wildlife refuge protects the animals and the environment. People who go to the Observatory usually stay in the town where there are stores, hotels, restaurants, and businesses. There are not many roads with traffic to disturb the animals. People do not hunt the animals or disturb their habitats at the park, but they do get to observe the animals in their natural settings.

Around the State Capitol, the population continues to grow. We see construction of new buildings for businesses, new houses and apartments, improved highways, and more students at the university campus. Older buildings are renovated for new uses. People are always on the streets with cars, trucks, busses, and motorcycles. The landscape is for people. Most animals have moved out of the area to places where they find food and safety. That is, except the thousands of bats that live under the Congress Avenue Bridge. People watch them leave every summer evening on their nightly quest for insects. People protect the bat habitat and the bats can help control insects like mosquitoes in the area of the Capitol. They are also very fun to watch.

d) In what ways would the human activity and the environment NOT fit as well? Could you even have the same structure/activity/event at a different site? The McDonald Observatory is located in an area with low population. The isolated place has very low amounts of artificial lights to interfere with the darkness of the night sky. People can study stars (astronomy) best when they...
can observe them without visual distractions. If the Observatory was in Austin, more people could go to the Observatory, but the lights of the city reflect into the sky. It is not dark enough to see stars very well. We could build an Observatory in Austin, but it would not fit the urban environment.

If the State Capitol were located in Ft. Davis, far from the large centers of population in Texas, many people would be too far away to conduct their daily business. If more highways and businesses were near Ft. Davis, the skies would no longer be dark enough to see the stars. The animal habitats would be disturbed. There would not be enough water for the people and animals. We could build a Capitol in Fort Davis, but it would not fit the rural environment.
Resources

Cultural Sites: Locations, Websites, QR codes

1. Institute of Texan Cultures – San Antonio -
   http://www.texancultures.com/festivals_events/texas_folklife_2016/

2. San Antonio National Historical Park Mission Trails – San Antonio -

3. Johnson Space Center – Houston - https://www.youtube.com/watch?v=gXP6TX_ej7w [1:24]
   https://www.youtube.com/watch?v=4oMimN_aC90 [24:00]


6. State Capitol – Austin - https://www.youtube.com/watch?v=dRQMPYcXVHM

8. Sixth Floor Museum and Texas School Book Depository – Dallas -
https://www.youtube.com/watch?v=7Ooo2JL2j7M [5:55]

10. Harbor Bridge and USS Lexington - Corpus Christi -
https://www.youtube.com/watch?v=WmNFjG7P6Ms [3:47]

11. El Mercado in San Antonio – images -
https://www.google.com/search?q=el+mercado+san+antonio+texas&bih=483&site=webhp&tbm=isch&tbos=uf&source=univ&sa=X&ved=0CEEQsARqFQoTCM6duuOnyscCFcscPgod8n8N3Q#imgrc=2DINFhDPojZm3M%3A

12. Six Flags over Texas – Arlington – (compare with Fiesta Texas)
g=GGmain&p2=^BNH^xmdm132^YYA^us&n=781acd49&qid=f27bb93206a421b98d34e1c843795
a2&ss=sub&pn=1&st=hp&ptb=6AE66787-248F-496E-9ED4-183C41118381&tpr=hpsb&si=CD15543_911-vidOrd=3&vidId=Eyw7GrD-cbw [6.27]
13. Children’s Museum of Houston
   https://www.youtube.com/watch?v=gHpDmbzwmuo [2:25]

14. Moody Gardens and Aquarium and Schlitterbahn Water Park – Galveston -

15. State Fair of Texas (Texas vs OU football Red River Rivalry)
   https://www.youtube.com/watch?v=xcDBPukoPMk [1:01]
16. Globe Life Texas Rangers Ballpark – Arlington - [www.youtube.com/watch?v=zUSCrwJAY5A](https://www.youtube.com/watch?v=zUSCrwJAY5A) [1:38]

17. McDonald Observatory – Ft. Davis - [https://www.youtube.com/watch?v=kn1_9Xenk3A](https://www.youtube.com/watch?v=kn1_9Xenk3A)

18. Caprock Canyon State Park State Bison Herd [https://www.youtube.com/watch?v=PzMy_FSsq3Q](https://www.youtube.com/watch?v=PzMy_FSsq3Q) [3:04]
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[https://www.youtube.com/watch?v=dSHwODH1QTs](https://www.youtube.com/watch?v=dSHwODH1QTs) [running with bison] [1:44]

19. National Ranching Heritage Center – Lubbock -  
[https://www.youtube.com/watch?v=d2HYdXxQnl8](https://www.youtube.com/watch?v=d2HYdXxQnl8) [:51]

[https://www.youtube.com/watch?v=J-Q7l4X0C-E](https://www.youtube.com/watch?v=J-Q7l4X0C-E) [4:12]
20. Texas Ranger Hall of Fame and Museum – Waco - https://www.youtube.com/watch?v=W_r_pyCt7w [1:04]


22. San Jacinto Battleground Archeology - Houston (LaPorte) https://www.youtube.com/watch?v=x9Z6ctRfO2M
(Monument) http://tpwd.texas.gov/state-parks/san-jacinto-battleground

23. Indigenous Cultures Institute – San Marcos
http://www.indigenouscultures.org
Cultural Sites

Printing images offers additional learning activities to preview the lessons and/or assess student knowledge

1. Institute of Texas Cultures – San Antonio

![Image of Institute of Texas Cultures]

http://www.nps.gov/imr/saan/images/92EF96C6-155D-451F-679A74AAEC0453FB.jpg

2. San Antonio National Historical Park Mission Trails – San Antonio

![Image of San Antonio National Historical Park Mission Trails]

http://www.nps.gov/imr/saan/images/92EF96C6-155D-451F-679A74AAEC0453FB.jpg
3. Johnson Space Center – Houston

http://www.nasa.gov/sites/default/files/thumbnails/image/iss045e013851.jpg

4. Battle Ship Texas – Houston

http://tpwd.texas.gov/state-parks/battleship-texas/gallery/bstx_2954.jpg

5. Fort Worth Stockyards – Fort Worth

https://www.fortworthstockyards.org/files/advertisement/Stockyards%20Station%20ad.jpg
6. State Capitol – Austin

[State Capitol Image]

https://upload.wikimedia.org/wikipedia/commons/d/df/TexasStateCapitol-2010-01.JPG

7. Congress Street Bats – Austin

[Congress Street Bats Image]

https://tpwd.texas.gov/education/hunter-education/online-course/images-conservation/Bats_TexasRiverSchool.png/@@images/d9cddf6c6-d965-4338-867af703752c0c41.png

8. Sixth Floor Museum and Texas School Book Depository – Dallas
9. Dallas World Aquarium – Dallas

https://upload.wikimedia.org/wikipedia/commons/5/58/Dallas_World_Aquarium_Entrance.JPG

10. Harbor Bridge and USS Lexington – Corpus Christi

https://upload.wikimedia.org/wikipedia/commons/6/68/SchoolbookDepository.jpg
Lessons to Support the *Giant Traveling Map of Texas*

11. El Mercado – San Antonio
   ![Image of El Mercado](https://upload.wikimedia.org/wikipedia/commons/d/dc/Corpus_Christi_Bridge.JPG)

12. Six Flags Over Texas – Arlington
   ![Image of Six Flags Over Texas](https://upload.wikimedia.org/wikipedia/commons/c/c1/Market_Square_SA.JPG)
   ![Image of Six Flags Over Texas](https://upload.wikimedia.org/wikipedia/commons/d/d0/Sfot_gotham_city.jpg)
13. Children’s Museum of Houston –

14. Moody Gardens and Aquarium/Schlitterbahn Water Park – Galveston

https://upload.wikimedia.org/wikipedia/commons/3/38/MoodyGardens.jpg
15. State Fair of Texas/ Texas vs Oklahoma football Red River Rivalry – Dallas

16. Globe Life Texas Rangers Ballpark – Arlington

https://upload.wikimedia.org/wikipedia/commons/b/bd/Rangers_Ballpark_in_Arlington.jpg
17. McDonald Observatory – Fort Davis


18. Caprock Canyon State Park State Bison Herd – Quitaque


19. National Ranching Heritage Center – Lubbock

https://upload.wikimedia.org/wikipedia/commons/b/b9/Cattle_sculpture_outside_National_Ranching_Heritage_Center_IMG_0243.JPG
20. Texas Ranger Hall of Fame and Museum – Waco

![Texas Ranger Hall of Fame and Museum](https://upload.wikimedia.org/wikipedia/commons/f/fc/Texas_Rangers_Museum.jpg)

21. Nacogdoches, Oldest Town in Texas – Nacogdoches

![Gladys Hampton Building](https://upload.wikimedia.org/wikipedia/commons/e/ec/Nacogdoches,_TX,_City_Hall_IMG_0972.JPG)

22. San Jacinto Monument & Battleground (Archeology) -Houston (LaPorte)
Lessons to Support the Giant Traveling Map of Texas

https://upload.wikimedia.org/wikipedia/commons/9/94/San_Jacinto_Monument.jpg


24. Create your own additional Cultural Site using www.qrstuff.com
    Can you find good videos for any of these? Consider if its importance is mainly as a cultural site or is its importance mainly as a physical site (like the Natural Bridge Caverns). Use the sites and videos in the lesson as a starting point for learning about the cultural sites of Texas.

    Additional Resource: Join the Texas State Parks Geocache Challenge. See www.geocache.com
WET, DRY, AND WILD RIVERS OF TEXAS

Purpose

- To identify major rivers of Texas
- To follow the flow of the river from source to mouth
- To identify the river basins of major rivers
- To correlate the amount of rainfall in areas of the river basin with the amount of water at different points along the river’s journey to the sea
- To recognize the range of activities that might occur along the river’s banks

TEKS Standards

*Grades 4 Social Studies*

(8) Geography. The student understands the location and patterns of settlement and the geographic factors that influence where people live. The student is expected to (C) explain the geographic factors such as landforms and climate that influence patterns of settlement and the distribution of population in Texas, past and present.

*Grade 7 Social Studies*

(9) Geography. The student understands the location and characteristics of places and regions of Texas. The student is expected to (A) locate the Mountains and Basins, Great Plains, North Central Plains, and Coastal Plains regions and places of importance in Texas during the 19th, 20th, and 21st centuries such as major cities, rivers, natural and historic landmarks, political and cultural regions, and local points of interest; (B) compare places and regions of Texas in terms of physical and human characteristics; and (C) analyze the effects of physical and human factors such as climate, weather, landforms, irrigation, transportation, and communication on major events in Texas.

Grade Levels: 4th - 7th

Suggested Time: 1-2 class periods

Materials: Giant Traveling Map, chains, blue chips, vinyl spots, aerial photos of Red River, River Basin Map of Texas, Data Recording Sheet: Rivers of Texas; Visual/Spatial Assessment

Instructional Material:

Rivers selected for this lesson are the longest ones in Texas and all flow into the Gulf of Mexico. Some important rivers, such as the Pecos, flow into other rivers. Some are intermittent streams that do not have surface water in some seasons. Teachers should emphasize the patterns on the landscape with attention to rivers and their tributaries flowing from higher to lower elevations. The mountains of New Mexico and Colorado are the sources of several Texas Rivers. Note also that water moves faster in steeper places and cuts a narrower channel. Rivers flowing across flat plains areas are slower moving and broader. The aerial photo in this lesson shows the Red River meandering across the western plains near Childress after heavy rains. The river picked up iron sediment in the soil on its journey downstream making the river look quite red. Use examples of rivers and tributaries in your local region to enrich this lesson. Vocabulary: tributary, source, mouth, headwaters, river basin (watershed).
See resource images and map at end of lesson.

**Student Activity/Assessment**

1. In small groups (3-4 students), use plastic chains to trace major rivers in Texas. Each group selects one of the following rivers in the chart below. These are the longest rivers in Texas.

2. Begin by placing a vinyl spot at the mouth of the river in the Gulf of Mexico. The mouth is in lowland (green). Then, carefully follow the main river up to its source in the higher elevations (tan). Put a marker (small vinyl pieces) at its source. If the source is beyond the borders of Texas, put the star in the area where it enters Texas.

3. Find all the small rivers (tributaries) that flow into the main river. Look carefully. Some may be close to one river but flow into a different river. Why might that happen?

4. When the river is marked, the group will sit on the map beside the river. Record information about the river in the chart for the class to see (use SmartBoard or other projection device).

5. The leader will then simulate rainfall across Texas by dropping small bingo chips onto the map. Beginning in the west, drop a few raindrops in the 10-20 inches of annual rainfall region. Be sure at least a couple of drops are in each of the river basins (see River Basin Map of Texas).

6. Move across the map to the east, increasing the amount of rain to areas near the mouths of the Sabine and Neches Rivers.

7. Students closest to the source of each river begin gently moving the “raindrops” along the tributaries and in the river basin to the main channel. The next student along the river’s channel continues moving the “water” from the river basin downstream. As tributaries join with the main river channel, note the increasing amounts of “water” in the river as it flows to its mouth at the Gulf of Mexico.

8. When all teams have recorded the data, each team, or each person, can complete the following data sheet before drawing conclusions about rivers.

**Extension**

Using the data in the chart and the experiences on the map, write three big ideas (conclusions) about rivers. A big idea (concept) is true about most of the rivers in Texas and will probably be true about rivers in other places. Clues: a) conclusions about high places and rivers; b) conclusions about changing amounts of water in the river basin; c) conclusions about climate and rivers, and d) conclusions about a river’s path over time.

**Assessment**

Visual/Spatial assessment: Draw a sketch map of the flow of a Texas river from its source to its mouth. Add three things that are near the river on its journey to the sea (such as vegetation, animals, and/or cities). What is one more important question you want to ask? It should be a really hard question. It should be a question that other people will not ask.
Name: ____________________________________________

**Data Recording Sheet: Rivers Basins of Texas**

<table>
<thead>
<tr>
<th>Rivers</th>
<th>Mouth – nearest town</th>
<th>Source – nearest landmark</th>
<th>Amount of Rainfall at source (inches)</th>
<th>Elevation at source/mouth</th>
<th>Length of river in Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rio Grande</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1250 miles</td>
</tr>
<tr>
<td>Brazos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>840 miles</td>
</tr>
<tr>
<td>Colorado</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>600 miles</td>
</tr>
<tr>
<td>Red</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>680 miles</td>
</tr>
<tr>
<td>Trinity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>550 miles</td>
</tr>
<tr>
<td>Neches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>416 miles</td>
</tr>
<tr>
<td>Sabine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>360 miles</td>
</tr>
<tr>
<td>Nueces</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>315 miles</td>
</tr>
<tr>
<td>Guadalupe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>250 miles</td>
</tr>
</tbody>
</table>
Three things that might be found along the banks of the river (How do you know they might be there?)

1) ______________________________________________________

2) ______________________________________________________

3) ______________________________________________________

My really hard question: __________________________________________________________
__________________________________________________________________________

This is a sketch map of the __________________________River.
(S = source; M = mouth)
Resources

#1 Aerial photo of the Red River looking west near Childress, TX after heavy rains in spring/summer.

#2 Aerial photo of the Red River looking west near Childress, TX after heavy rains in spring/summer. Note the patterns of farmed fields and other streams.
URBAN POPULATION PATTERNS IN TEXAS: USING CENSUS DATA 2010

Purpose
- To locate selected towns established in various physical regions of Texas
- To identify the primary highways linking urban populations in Texas today
- To describe the urban population patterns in Texas by comparing 12 large population centers
- To draw conclusions about developing population patterns in Texas today

TEKS Standards

**Grade 4 Social Studies**
(6) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to (B) translate geographic data, population distribution, and natural resources into a variety of formats such as graphs and maps.
(8) Geography. The student understands the location and patterns of settlement and the geographic factors that influence where people live. The student is expected to (B) describe and explain the location and distribution of various towns and cities in Texas, past and present; and (C) explain the geographic factors such as landforms and climate that influence patterns of settlement and the distribution of population in Texas, past and present.

**Grade 7 Social Studies**
(8) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to (A) create and interpret thematic maps, graphs, charts, models, and databases representing various aspects of Texas during the 19th, 20th, and 21st centuries; and (B) analyze and interpret geographic distributions and patterns in Texas during the 19th, 20th, and 21st centuries.
(9) Geography. The student understands the location and characteristics of places and regions of Texas. The student is expected to (A) locate the Mountains and Basins, Great Plains, North Central Plains, and Coastal Plains regions and places of importance in Texas during the 19th, 20th, and 21st centuries such as major cities, rivers, natural and historic landmarks, political and cultural regions, and local points of interest; (B) compare places and regions of Texas in terms of physical and human characteristics.
(11) Geography. The student understands the characteristics, distribution, and migration of population in Texas in the 19th, 20th, and 21st centuries. The student is expected to (C) analyze the effects of the changing population distribution and growth in Texas during the 20th and 21st centuries and the additional need for education, health care, and transportation

**Grade Levels:** 4th – 7th

**Class Time:** 2 class periods

**Materials:** Giant Traveling Map of Texas, resource sheet: census data 2010, student recording sheets, Department of Transportation Highway Map, chains, vinyl spots

**Instructional Background**

Large cities in Texas are located in different regions of the state and are connected by a network of Interstate highways, US highways, and state highways. Locating the selected cities and looking for
patterns in the arrangement of these cities on the landscape engages students in critical thinking supported by data and communicated in both visual and written modes.

**Student Learning Activity/Assessment**

Population Patterns of the 12 largest cities/towns in Texas according to the 2010 Census.

1. Use a Texas Department of Transportation map to locate major interstate highways in Texas (IH-10, IH-20, IH-30, IH-35, IH-40, and IH-45). Use rope or chains from the resource materials to mark the locations.

2. Each group of students will focus attention on a particular set of major Texas cities and record data about the physical location. See resource information *Texas Cities _ Population 2010* to collect data on the following cities and record it on the graph *Data Recording Sheet #1 “Characteristics of Locations of Cities.”* Each small group of students may focus on one set of cities and then share information with the total group to complete the chart.

3. When finished, groups will compare information with one another. They will find out what other cities share common characteristics with their own. Are there any patterns in the arrangement of the cities by location or by size? How does the arrangement of cities influence the decisions for building roads, establishing new schools, or providing human services across the state of Texas?

4. Next, students will locate the 2010 Census population data for each of the cities using the *Resource: Texas Cities _ Population Chart*. They will record the information from the table to the graph on *Data Recording Sheet #2: Using Charts and Graphs to Display Information*.

5. Finally, each group will propose a pattern they have found among the cities (i.e. the cities have less population the further west they are), citing evidence and receiving feedback from peers. *Student Pattern Analysis Sheet #3 – Writing paragraph to communicate thinking and Student Feedback Sheet #4 - Discussing points of view and drawing conclusions from evidence.*
Resource

Information: Texas Cities _Population 2010

Houston

San Antonio

Dallas

Austin
<table>
<thead>
<tr>
<th>Houston</th>
<th>San Antonio</th>
<th>Dallas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austin</td>
<td>Fort Worth</td>
<td>El Paso</td>
</tr>
<tr>
<td>Arlington</td>
<td>Corpus Christi</td>
<td>Plano</td>
</tr>
<tr>
<td>Laredo</td>
<td>Lubbock</td>
<td>Garland</td>
</tr>
</tbody>
</table>
Texas Cities Population 2010

The following is the list of Texas' most populous incorporated cities, towns, and unincorporated Census Designated Places (CDPs). The population is according to the 2014 census estimates. San Marcos was the fastest growing city in the state between 2010 and 2014.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Place name</th>
<th>2014 Estimate</th>
<th>2010 Census</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Houston[2]</td>
<td>2,239,558</td>
<td>2,100,263</td>
<td>6.63%</td>
</tr>
<tr>
<td>2</td>
<td>San Antonio</td>
<td>1,436,697</td>
<td>1,327,407</td>
<td>8.23%</td>
</tr>
<tr>
<td>3</td>
<td>Dallas</td>
<td>1,281,047</td>
<td>1,197,816</td>
<td>6.95%</td>
</tr>
<tr>
<td>4</td>
<td>Austin</td>
<td>912,791</td>
<td>790,390</td>
<td>15.49%</td>
</tr>
<tr>
<td>5</td>
<td>Fort Worth</td>
<td>812,238</td>
<td>741,206</td>
<td>9.58%</td>
</tr>
<tr>
<td>6</td>
<td>El Paso</td>
<td>679,036</td>
<td>649,121</td>
<td>4.61%</td>
</tr>
<tr>
<td>7</td>
<td>Arlington</td>
<td>383,204</td>
<td>365,438</td>
<td>4.86%</td>
</tr>
<tr>
<td>8</td>
<td>Corpus Christi</td>
<td>320,434</td>
<td>305,215</td>
<td>4.99%</td>
</tr>
<tr>
<td>9</td>
<td>Plano</td>
<td>278,480</td>
<td>259,841</td>
<td>7.17%</td>
</tr>
<tr>
<td>10</td>
<td>Laredo</td>
<td>252,309</td>
<td>236,091</td>
<td>6.87%</td>
</tr>
<tr>
<td>11</td>
<td>Lubbock</td>
<td>243,839</td>
<td>229,573</td>
<td>6.21%</td>
</tr>
<tr>
<td>12</td>
<td>Garland</td>
<td>235,501</td>
<td>226,876</td>
<td>3.80%</td>
</tr>
<tr>
<td>13</td>
<td>Irving</td>
<td>232,406</td>
<td>216,290</td>
<td>7.45%</td>
</tr>
<tr>
<td>14</td>
<td>Amarillo</td>
<td>197,254</td>
<td>190,695</td>
<td>3.44%</td>
</tr>
<tr>
<td>15</td>
<td>Grand Prairie</td>
<td>185,453</td>
<td>175,396</td>
<td>5.73%</td>
</tr>
<tr>
<td>16</td>
<td>Brownsville</td>
<td>183,046</td>
<td>175,023</td>
<td>4.58%</td>
</tr>
<tr>
<td>17</td>
<td>McKinney</td>
<td>156,767</td>
<td>131,117</td>
<td>19.56%</td>
</tr>
<tr>
<td>18</td>
<td>Pasadena</td>
<td>153,887</td>
<td>149,043</td>
<td>3.25%</td>
</tr>
<tr>
<td>19</td>
<td>Frisco</td>
<td>145,035</td>
<td>116,989</td>
<td>23.97%</td>
</tr>
<tr>
<td>20</td>
<td>Mesquite</td>
<td>144,416</td>
<td>139,824</td>
<td>3.28%</td>
</tr>
<tr>
<td>21</td>
<td>McAllen</td>
<td>140,717</td>
<td>130,242</td>
<td>10.80%</td>
</tr>
<tr>
<td>22</td>
<td>Killeen</td>
<td>138,154</td>
<td>127,921</td>
<td>8.00%</td>
</tr>
<tr>
<td>23</td>
<td>Waco</td>
<td>130,194</td>
<td>124,805</td>
<td>4.32%</td>
</tr>
<tr>
<td>24</td>
<td>Carrollton</td>
<td>128,353</td>
<td>119,097</td>
<td>7.77%</td>
</tr>
<tr>
<td>25</td>
<td>Denton</td>
<td>128,205</td>
<td>113,383</td>
<td>13.07%</td>
</tr>
<tr>
<td>26</td>
<td>Midland</td>
<td>128,037</td>
<td>111,147</td>
<td>15.20%</td>
</tr>
<tr>
<td>27</td>
<td>Abilene</td>
<td>120,958</td>
<td>117,063</td>
<td>3.33%</td>
</tr>
<tr>
<td>28</td>
<td>Beaumont</td>
<td>117,585</td>
<td>118,296</td>
<td>-0.60%</td>
</tr>
<tr>
<td>29</td>
<td>Odessa</td>
<td>114,597</td>
<td>99,940</td>
<td>14.67%</td>
</tr>
<tr>
<td>30</td>
<td>Round Rock</td>
<td>112,744</td>
<td>99,887</td>
<td>12.87%</td>
</tr>
<tr>
<td>31</td>
<td>The Woodlands (CDP)[3]</td>
<td>107,769</td>
<td>93,847</td>
<td>14.83%</td>
</tr>
<tr>
<td>32</td>
<td>Richardson</td>
<td>108,617</td>
<td>99,223</td>
<td>9.47%</td>
</tr>
<tr>
<td>33</td>
<td>Wichita Falls</td>
<td>105,114</td>
<td>104,553</td>
<td>0.54%</td>
</tr>
<tr>
<td>37</td>
<td>College Station</td>
<td>103,483</td>
<td>93,857</td>
<td>10.26%</td>
</tr>
<tr>
<td>36</td>
<td>Pearland</td>
<td>103,441</td>
<td>91,252</td>
<td>13.36%</td>
</tr>
<tr>
<td>34</td>
<td>Lewisville</td>
<td>102,889</td>
<td>95,290</td>
<td>7.97%</td>
</tr>
<tr>
<td>35</td>
<td>Tyler</td>
<td>101,421</td>
<td>96,500</td>
<td>4.67%</td>
</tr>
<tr>
<td></td>
<td>City</td>
<td>Population</td>
<td>Previous Year's Population</td>
<td>Change %</td>
</tr>
<tr>
<td>---</td>
<td>-----------------</td>
<td>------------</td>
<td>-----------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>38</td>
<td>San Angelo</td>
<td>98,975</td>
<td>93,200</td>
<td>6.19%</td>
</tr>
<tr>
<td>39</td>
<td>League City</td>
<td>94,403</td>
<td>83,560</td>
<td>8.88%</td>
</tr>
<tr>
<td>40</td>
<td>Allen</td>
<td>94,179</td>
<td>84,246</td>
<td>11.79%</td>
</tr>
<tr>
<td>41</td>
<td>Sugar Land</td>
<td>86,777</td>
<td>78,817</td>
<td>10.10%</td>
</tr>
<tr>
<td>42</td>
<td>Edinburg</td>
<td>83,014</td>
<td>77,100</td>
<td>7.67%</td>
</tr>
<tr>
<td>43</td>
<td>Mission</td>
<td>82,431</td>
<td>77,058</td>
<td>6.97%</td>
</tr>
<tr>
<td>44</td>
<td>Longview</td>
<td>81,593</td>
<td>80,455</td>
<td>1.41%</td>
</tr>
<tr>
<td>45</td>
<td>Bryan</td>
<td>80,913</td>
<td>76,201</td>
<td>6.18%</td>
</tr>
<tr>
<td>46</td>
<td>Baytown</td>
<td>76,127</td>
<td>71,802</td>
<td>6.02%</td>
</tr>
<tr>
<td>47</td>
<td>Pharr</td>
<td>75,382</td>
<td>70,400</td>
<td>7.72%</td>
</tr>
<tr>
<td>48</td>
<td>Temple</td>
<td>70,765</td>
<td>66,102</td>
<td>7.05%</td>
</tr>
<tr>
<td>49</td>
<td>Missouri City</td>
<td>71,710</td>
<td>67,358</td>
<td>6.46%</td>
</tr>
<tr>
<td>50</td>
<td>Flower Mound</td>
<td>69,650</td>
<td>64,669</td>
<td>7.70%</td>
</tr>
<tr>
<td>51</td>
<td>North Richland Hills</td>
<td>68,529</td>
<td>63,343</td>
<td>8.19%</td>
</tr>
<tr>
<td>52</td>
<td>New Braunfels</td>
<td>66,394</td>
<td>57,740</td>
<td>14.99%</td>
</tr>
<tr>
<td>53</td>
<td>Victoria</td>
<td>66,094</td>
<td>62,592</td>
<td>5.59%</td>
</tr>
<tr>
<td>54</td>
<td>Atascocita (CDP)</td>
<td>65,844</td>
<td>65,844</td>
<td>0.00%</td>
</tr>
<tr>
<td>55</td>
<td>Harlingen</td>
<td>65,914</td>
<td>64,849</td>
<td>1.64%</td>
</tr>
<tr>
<td>56</td>
<td>Conroe</td>
<td>65,871</td>
<td>56,207</td>
<td>17.19%</td>
</tr>
<tr>
<td>57</td>
<td>Cedar Park</td>
<td>63,574</td>
<td>48,937</td>
<td>29.91%</td>
</tr>
<tr>
<td>58</td>
<td>Mansfield</td>
<td>62,246</td>
<td>56,368</td>
<td>10.43%</td>
</tr>
<tr>
<td>59</td>
<td>Georgetown</td>
<td>59,102</td>
<td>47,400</td>
<td>24.69%</td>
</tr>
<tr>
<td>60</td>
<td>San Marcos</td>
<td>58,892</td>
<td>44,894</td>
<td>31.18%</td>
</tr>
<tr>
<td>61</td>
<td>Rowlett</td>
<td>58,407</td>
<td>56,199</td>
<td>3.93%</td>
</tr>
<tr>
<td>62</td>
<td>Pflugerville</td>
<td>54,644</td>
<td>46,936</td>
<td>16.42%</td>
</tr>
<tr>
<td>63</td>
<td>Port Arthur</td>
<td>54,548</td>
<td>53,818</td>
<td>1.36%</td>
</tr>
<tr>
<td>64</td>
<td>Spring (CDP)</td>
<td>54,298</td>
<td>54,298</td>
<td>0.00%</td>
</tr>
<tr>
<td>65</td>
<td>Euless</td>
<td>53,224</td>
<td>51,277</td>
<td>3.80%</td>
</tr>
<tr>
<td>66</td>
<td>DeSoto</td>
<td>51,934</td>
<td>49,047</td>
<td>5.89%</td>
</tr>
<tr>
<td>67</td>
<td>Grapevine</td>
<td>50,844</td>
<td>46,334</td>
<td>9.73%</td>
</tr>
</tbody>
</table>
## Data Recording Sheet #1 – Collecting data from maps

<table>
<thead>
<tr>
<th>City</th>
<th>Region</th>
<th>Nearby Rivers/Bodies of Water</th>
<th>Nearby interstate highways</th>
<th>Other nearby population centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set A: Corpus Christi, Houston, San Antonio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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Data Recording Sheet #2 – Using Charts and Graphs to display information

<table>
<thead>
<tr>
<th>Population of Selected Texas Cities 2010</th>
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<tbody>
<tr>
<td>Cities</td>
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<tr>
<td>Corpus Christi, Houston, San Antonio</td>
</tr>
<tr>
<td>Austin, Garland, Dallas</td>
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<tr>
<td>Arlington, Plano, Ft. Worth</td>
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<tr>
<td>Lubbock, El Paso, Laredo</td>
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</table>

Student Pattern Analysis Sheet #3

a) One spatial pattern about the cities that I see is ____________________________________________

b) Three pieces of evidence that support the big idea of this pattern are listed here:
   1) 
   2) 
   3) 

c) A second spatial pattern about the cities that I see is ____________________________________________

d) Three pieces of evidence that support the big idea of this pattern are listed here:
   1) 
   2) 
   3) 

Student Feedback Sheet #4

a) One easily understood pattern is explained by group # _______. The pattern is _______. Good evidence is ____________________________________________

b) A pattern that shows creative thinking was explained by group #_. The pattern is _ __. Good evidence is ____________________________________________

  _____.

c) A pattern that I need to consider further was offered by group #___. The pattern is ______. Additional evidence I need is ___.

SETTLEMENT OF TEXAS TOWNS

Purpose
- To identify the pattern of settlement using historic census data representing three eras in Texas history: early statehood (1850), railroad era (1890), boom times (1920)
- To visualize the growth of towns on the Giant Traveling Map of Texas

TEKS Standards

Grade 4 Social Studies
(6) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to (A) apply geographic tools, including grid systems, legends, symbols, scales, and compass roses, to construct and interpret maps; and (B) translate geographic data, population distribution, and natural resources into a variety of formats such as graphs and maps.
(8) Geography. The student understands the location and patterns of settlement and the geographic factors that influence where people live. The student is expected to (A) identify and explain clusters and patterns of settlement in Texas at different time periods such as prior to the Texas Revolution, after the building of the railroads, and following World War II; (B) describe and explain the location and distribution of various towns and cities in Texas, past and present; and (C) explain the geographic factors such as landforms and climate that influence patterns of settlement and the distribution of population in Texas, past and present.

Grade 7 Social Studies
(8) Geography. The student uses geographic tools to collect, analyze, and interpret data. The student is expected to (A) create and interpret thematic maps, graphs, charts, models, and databases representing various aspects of Texas during the 19th, 20th, and 21st centuries; and (B) analyze and interpret geographic distributions and patterns in Texas during the 19th, 20th, and 21st centuries.
(11) Geography. The student understands the characteristics, distribution, and migration of population in Texas in the 19th, 20th, and 21st centuries.

Grade Levels: 4th-7th

Suggested Time: 1-2 class periods

Materials: Giant Traveling Map, Resource: Texas Almanac_ City Population History 1850-2000; Legos, symbols of three eras, card holders, Student Data Recording Sheet

Instructional Background
Census data is available for some towns in Texas as early as 1850 which helps us establish dates of settlement across the state. This lesson focuses on the geographic concepts and does not include historical data relevant to who settled in these towns or why they moved other places. Please extend the historical content from your curriculum to enrich the lesson provided here. The teacher may also
choose to include a few additional nearby cities that the students will know and link to the local community and other social studies lessons.

Use the resource *Texas Almanac: City Population History 1850-2000* to find how the population of Texas cities has changed in 150 years. The tables are available at the following site.

**Student Learning Activity/Assessment**

1. Divide the class into small groups of 2 or 3 students and assign to each group 2-3 cities listed below. Cities for this activity were selected to show historical change in population – the data is based on reported census data (some towns existed but not all towns had a census taken).

2. Students will locate their assigned cities on the Giant Traveling Map of Texas and mark each with a vinyl spot: Abilene (1890), Amarillo (1890), Austin (1850), Beaumont (1850, 1890), Big Spring (1900), College Station (1940), Dallas (1850), El Paso (1880), Galveston (1850), Houston (1850), Laredo (1860), Lubbock (1910), Midland (1910), San Angelo (1910), San Antonio (1850), Tyler (1850), Waco (1850).

3. Next, students will use Legos to show the population in each of the three historical eras for one or two cities. One Lego = 5,000 people. For example, if a town has a population of 3,000, it will not have enough to use even one Lego. However, students can put a Texas flag symbol in a holder at the site to show the town had people there by 1850. If a town has a population of 15,000, three Legos are stacked together to build a population tower. Students will build a separate population tower for the town in each of the three historical eras using data from 1850, 1890, and 1920.

4. Then the students will use symbols to identify which period the tower represents. Place one of the symbols on top of each tower to identify the historical period the population tower represents. Early statehood is represented by the Texas flag; the railroad growth era is represented by railroad crossings signs; and the oil and boom times is represented by the oil derrick (*Spindletop*).

5. Record the population data on the *Student Data Recording Sheet – Texas Cities Change Over Time*.

6. When the towers are built, the teacher may facilitate discussion to draw conclusions about growth of settlements in Texas 1850-1920. Which were the largest cities in 1850, 1890, and 1920. In what year did the 1850 population double? Triple? Increase 10 times? 100 times? If we do not know, just put an X in your chart.

7. Do you notice how the towers visually create a bar graph on the map? Create a bar graph on paper to show changes over time for at least four different cities. See the bar graph template in *Urban Population Patterns in Texas 2010*.

8. *Challenge Activity - Making a Human Graph of Population Changes*: Extend the idea of the bar graph showing population to include information about population of a particular city for at least three additional historical time periods. Choose six team members to create a human bar graph to represent the population of a particular city 1850-2010 (such as Dallas, Lubbock, or Corpus Christi). Use the menu holders in the trunk and index cards to identify the years of the
population you are representing (such as 1850, 1890, 1910, 1950, 1980, and 2010) and the name of the town. Use the town card like the title of the graph. Place cards with the census dates in chronological order on the floor. To build the human graph, one person on the team represents the population for each of the years selected. Here is one way to do that: one team member can sit on the floor to represent a low population and another a team member may stand tall to represent a high population.

Extension
Which cities show the greatest growth over the shortest amount of time? Which cities show slow growth over time? What cities were established in more recent times? Which are the oldest cities? Which cities are east of IH-35 today? West of IH-35? Describe the pattern of the way the cities are spatially spread across the state. What is the oldest population information for the city in the Texas Almanac? How many people were counted?
Symbols for 3 historical eras in Texas history: Texas flag, railroad crossing signs, oil derrick
Name ____________________________

Student Data Recording Sheet – Texas Cities Change over Time (short version for student use)

<table>
<thead>
<tr>
<th>City</th>
<th>1850</th>
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<th>1890</th>
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<th>1920</th>
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<th>1950</th>
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TEXAS TREASURE HUNT

Purpose

- To review knowledge and skills of Texas geography, history, and social studies skills using the Giant Traveling Map of Texas
- To demonstrate applied social studies skills of collaboration, communication, problem-solving and research to complete a group task from the geography and history resources of the Giant Traveling Map lessons
- To assess student learning by observing team members’ use of critical thinking and decision-making skills in a Texas-sized virtual tour to celebrate state geography and history.

TEKS Standards

Grades 4 & 7 Social Studies

(21) Social studies skills. The student applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including electronic technology. The student is expected to (B) analyze information by sequencing, categorizing, identifying cause-and-effect relationships, comparing, contrasting, finding the main idea, summarizing, making generalizations and predictions, and drawing inferences and conclusions; (C) organize and interpret information in outlines, reports, databases, and visuals, including graphs, charts, timelines, and maps; (E) use appropriate mathematical skills to interpret social studies information such as maps and graphs.

(22) Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to (A) use social studies terminology correctly; (B) incorporate main and supporting ideas in verbal and written communication; (C) express ideas orally based on research and experiences; (H) use appropriate mathematical skills to interpret social studies information such as maps and graphs, and (E) use standard grammar, spelling, sentence structure, and punctuation.

(23) Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others, in a variety of settings. The student is expected to: (A) use a problem-solving process to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution; and (B) use a decision-making process to identify a situation that requires a decision, gather information, identify options, predict consequences, and take action to implement a decision.

Grade Levels: 3rd - 7th

Suggested Time: 1-2 class periods

Materials: resource cards, images, maps, and lessons available with the Giant Traveling Map of Texas; chains, vinyl spots; additional post-it notes or stickers (as needed) to mark treasures for each team; ¼ sized sheets of paper for drawing (4 per team) or index cards

Instructional Information

Include as many of the map resources as possible in setting up this lesson. Select items from the lessons that students experienced to emphasize concepts relevant to the particular content area, grade level, students, and learning environment.
Consider available digital resources as a means of keeping track of the places/items as they are found by each team in real time. When a site or animal has been found by one team, it is no longer available to other teams. A recordkeeping sheet should be visible to all teams. Interactive use of a smart board to track each team’s progress adds a technology application that motivates and models successful critical thinking and decision-making.

Designate a penalty box area away from the map for any team whose members do not follow the guidelines for the activity.

**Student Activity/Assessment**

Teams are assigned a spot on the edge of the map as the Home Base. They must be seated there at the beginning and the end of the game and as each treasure is recorded on a *Class Recording Sheet* (paper/white board/smart board/other app).

Each team will have one piece of chain. Prior to the beginning of the Treasure Hunt, each team will use the map scale to measure 100, 200, 300 miles and put markers on their chain. The marker can be a piece of string/yarn available in the classroom. Teams can measure mileage with their chains.

The team captain will draw a number to choose one of the six largest cities as the starting point. Six cities: *Houston, Dallas, San Antonio, Austin, Ft. Worth, El Paso*. Mark the city as the team’s starting point with one of the vinyl spot markers. On the *Class Recording Sheet*, identify the region where the city is located (review Everything’s Big lesson).

The first team to locate/identify all five items on the treasure hunt, wins the game.

**Game Guidelines:**

1. Teams must remain together as they search for treasures.

2. Teams must complete the treasure hunt in order (1, 2, 3, 4, and 5).

3. As each treasure location or item is found, one member of the team must record it on the reporting sheet/smartboard/app. One team member will be designated to record each treasure. Each member must record at least one treasure.

4. While the treasure is recorded by one team member, all other members must be seated in their designated Home Base.

5. When a place/object has been found by one team, it is no longer available to the other teams.

6. Students must use classroom voice levels. Penalty: team moved to penalty box for 20 seconds.

7. Students may not run or slide on map. Penalty: team moved to penalty box for 20 seconds.

8. Students may not have shoes on the map or any sharp objects. Penalty: team moved to penalty box for 20 seconds.
9. Additional color coded post-it notes or stickers can be used on the map to identify the treasures as they are found.

10. For every treasure accurately found and reported, the team receives ten points. Words must be spelled correctly and the answer must be accurate.

Here are the five treasures to find:

**Item #1:** Go to a secondary city with more than 50,000 people that is less than 500 miles by highway from the starting point city. Mark the spot with post-it note or sticker. Identify one physical feature that is visible within 15 miles of the city. Record the name of the site and the physical feature on the *Class Recording Sheet* (review *Urban Population Patterns and Settlements* lessons).

**Item #2:** Identify two animals that live in the habitat and create a recognizable drawing of each of the animals. Use a ¼ sheet of paper and pencil. Add a title with the animal’s name and one fact about the animal. Post it on the *Class Recording Sheet* (review *Creatures Great and Small* lesson).

**Item #3:** Travel in a different cardinal direction 200 – 500 miles to find a cultural site/event/festival. Mark the spot. Identify the event/site and two descriptive words on the *Class Recording Sheet* (review *Show Me Texas* lesson).

**Item #4:** Go to the nearest river. Use a river route to travel upstream at least 75 miles to the intersection of a tributary with the major river (review river basin map) in a different region. Use a post-it note to name the new region and identify its a) climate, b) annual rainfall, c) primary vegetation, and e) elevation. Report the information on the *Class Recording Sheet* (review *Wet, Dry, and Wild* lesson).

**Item #5:** Next, make a flight by your own airplane, to a site near a Texas border. If it is more than 1,000 miles away, the team receives 15 bonus points. Land at a city with an airport (search: city name, airport). Record the name of the new site. What state/country is on the other side of the border? Name the river or the latitude/longitude line that marks the border you have found. Post the name and feature on the *Class Recording Sheet* (review *Shapely State, Regions, and Legend-ary* lessons).
<table>
<thead>
<tr>
<th>Team City</th>
<th>Treasure 1</th>
<th>Treasure 2</th>
<th>Treasure 3</th>
<th>Treasure 4</th>
<th>Treasure 5</th>
<th>Penalty (20 sec)</th>
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<tbody>
<tr>
<td>Houston</td>
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