Spatial Skills

Texas Essential Knowledge and Skills (TEKS)

4th grade	5th grade	6th grade	7th grade	8th grade
6. uses geographic tools to collect analyze, and interpret data [GS1] 6a. apply geographic tools, including grid systems, legends, symbols, scales, and compass rose, to construct and interpret maps [GS1-1A] 6b. translate geographic data, population distribution, and natural resources into a variety of formats such as graphs and maps [GS1-2B] 9c. compare the positive and negative consequences of human modification of the environment in Texas, past and present, both governmental and private, such as economic development and the impact on habitats and wildlife as well as air and water quality [GS14-3]	6. uses geographic tools to collect, analyze, and interpret data [GS1] 6a. apply geographic tools, including grid systems, legends, symbols, scales, and compass roses, to construct and interpret maps [GS1-1A] 6b. translate geographic data into a variety of formats such as raw data to graphs and maps [GS1-2B]	3. uses geographic tools to answer geographic questions 3a. pose and answer geographic questions, including: Where is it located? Why is it there? What is significant about its location? How is its location related to the location of other people, places, and environments? 3b. pose and answer questions about geographic distributions and patterns for various world regions and countries shown on maps, graphs, charts, models, and databases 3c. compare various world regions and countries using data from geographic tools, including maps, graphs, charts, databases, and models 3d. create thematic maps, graphs, charts, models, and databases depicting aspects such as population, disease, and economic activities of various world regions and countries 4. understands the factors that influence the locations and characteristics of locations of various	8. uses geographic tools to collect, analyze, and interpret data [GS1] 8a. create and interpret thematic maps, graphs, charts, models, and databases representing various aspects of Texas during the 19th, 20th, and 21st centuries [GS1-1,2] 8b. analyze and interpret geographic distributions and patterns in Texas during the 19th, 20th, and 21st centuries [GS1-4]	10. Geography. The student understands the location and characteristics of places and regions of the United States, past and present. The student is expected to: 10a. locate places and regions of importance in the United States during the 17th, 18th, and 19th centuries; 10c. analyze the effects of physical and human geographic factors on major historical and contemporary events in the United States. 29i. Create thematic maps, graphs, charts, models, and databases representing various aspects of the United States

		contemporary societies on maps and globes and uses latitude and longitude to determine absolute locations [GS1 and GS4] 4a. locate various contemporary societies on maps and globes using latitude and longitude to determine absolute location [GS2-1] 4d. identify and locate major physical and human geographic features such as landforms, water bodies, and urban centers of various places and regions; [GS2, GS4] 4f. identify the location of major world countries such as Canada, Mexico, France, Germany, the United Kingdom, Italy, Spain, Norway, Sweden, Russia, South Africa, Nigeria, Iraq, Afghanistan, Israel, Iran, India, Pakistan, the People's Republic of China, the Republic of China (Taiwan), Japan, North and South Korea, Indonesia, and Australia [GS2] 4e. draw sketch maps that illustrate various places and regions [GS2-1]		

Texas College and Career Readiness Standards

http://www.thecb.state.tx.us/collegereadiness/crs.pdf

SS.I.B Periodization and chronological reasoning

SS.I.C Change and continuity of political ideologies, constitutions, and political behavior

SS.I.D Change and continuity of social groups, civic organizations, institutions, and their interaction

SS.I.F Problem-solving and decision-making skills

SS.III.B Research and Methods

SS.III.D Reaching conclusions

SS.IV.A Critical examination of texts, images, and other sources of information

SS.IV.D Reaching conclusions

National Geography Standards

Standard	4th grade	8th grade
1 How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information.	1. Properties and functions of geographic representations—such as maps, globes, graphs, diagrams, aerial and other photographs, remotely sensed images, and geographic visualization *Therefore, the student is able to:* A. Identify and describe the properties (position and orientation, symbols, scale, perspective, coordinate systems) and functions of geographic representations, as exemplified by being able to • Identify and describe the properties of a variety of maps and globes (e.g., title, legend, cardinal and intermediate directions, scale, symbols, grid, principal parallels, meridians) and purposes (wayfinding, reference, thematic). • Identify and describe the functions of a variety of geographic representations. • Identify and describe the properties and functions of maps students collect from magazines, news articles, and tourist brochures.	1. The advantages and disadvantages of using different geographic representations—such as maps, globes, graphs, diagrams, aerial and other photographs, remotely sensed images, and geographic visualizations for analyzing spatial distributions and patterns *Therefore, the student is able to:* A. Analyze and explain the properties (position and orientation, projections, symbols, scale, perspective, coordinate systems) and functions of geographic representations, as exemplified by being able to • Analyze geographic representations based on their properties (e.g., orientation, grid system, scale, resolution, and content) and purposes (e.g., using GIS and digital globes to explore geographic information and relationships at a range of scales). • Analyze the properties of three geographic representations of the same place (such as a street map, a

	B. Describe how properties of geographic representations determine the purposes they can be used for, as exemplified by being able to • Identify the maps or types of maps most appropriate for specific purposes, (e.g., to locate physical and/or human features, to determine the shortest route from one town to another town, to compare the number of people living at two or more locations). • Describe how a variety of geographic representations (maps, globes, graphs, diagrams, aerial and other photographs, GPS) are used to communicate different types of information. • Describe how maps are created for a specific purpose (e.g., school fire-drill map, the route from home to school, classroom map of learning center materials). 2. Geospatial data are connected to locations on Earth's surface *Therefore, the student is able to:* A. Identify examples of geospatial data, as exemplified by being able to • Identify landmarks on the school grounds and describe their size, shape, and location. • Identify the spatial location of each student's assigned seat in the classroom. • Identify the locations and types of trees in the neighborhood of the school. B. Construct maps and graphs to display geospatial data, as exemplified by being able to • Construct a map that displays geospatial data using symbols explained in a key (e.g., a sketch map to illustrate a narrative story, a map of cars in the school parking lot showing type and color, a class-room map showing different types of	topographic map, and a satellite image) and explain how each might be suitable for a different purpose. • Explain how different geographic representations are used in a variety of settings (e.g., a GIS in a computer lab, topographic map for backcountry hiking, GPS navigation for car travel). B. Evaluate the appropriate use of geospatial representations for specific geographic tasks, such as analyzing spatial distributions and patterns, as exemplified by being able to • Explain why particular maps are appropriate for a specific purpose (e.g., a cartogram to illustrate total population, a remotely sensed image to observe land-use change, topographic maps to consider the best location for a wind farm, a highway map to consider best routes for new transportation corridors). • Identify and evaluate specific maps and/or geospatial technologies for use in different occupations (e.g., ambulance driver, airline pilot, ship's captain, cross-country truck driver, business analyst). • Compare the patterns shown by geographic representations at different scales (e.g., neighborhood, city, state, country). 2. The acquisition and organization of geospatial data to construct geographic representations *Therefore, the student is able to:* A. Identify the variety of geospatial data sources (e.g., student-generated data such as surveys, observations, and fieldwork or data sources such as US Census data, US Geological Survey (USGS), and the United Nations) and formats (e.g., digital databases, text, tables, images), as exemplified by being able to • Identify examples of different sources of geospatial data related to population, land forms, road networks, weather, etc. (e.g., Census

	tables, desks, and chairs). • Describe the results of a survey of classmates about a geographic question concerning their school (e.g., where to add another swing set, where to add a cover over existing playground equipment, where to place more drinking fountains) using graphs and maps. • Construct a map of the United States using symbols to show quantities by state (e.g., population, professional sports teams, mountain peaks over a certain elevation). 3. Geospatial technologies—Internet--based mapping applications, GIS, GPS, geovisualization, and remote sensing—display geospatial data *Therefore, the student is able to:* A. Compare how different geospatial technologies are used to display geospatial data, as exemplified by being able to • Identify and describe the types of information communicated by different Internet-based mapping technologies. • Describe and analyze the similarities and differences among the results from different online navigation systems. • Compare the similarities and differences of information presented in online road maps, satellite images, or street-view data. 4. The interpretation of geographic representations *Therefore, the student is able to:* A. Describe and analyze the ways in which geographic representations communicate geospatial information, as exemplified by being able to • Describe the purpose and components of a typical map key or legend. • Describe and analyze the similarities	Bureau, [USGS], Environmental Protection Agency). • Identify the different data formats that can be used to organize data sets for population, land forms, road networks, weather, etc. (e.g., tables, graphs, maps, remotely sensed images). • Identify the data to include in student-generated geospatial data sets to capture human or physical characteristics of the school neighbor-hood (e.g., count and map the location, amount, and directions of pedestrian traffic on streets near the school). B. Construct maps using data acquired from a variety of sources and in various formats (e.g., digital databases, text, tables, images), as exemplified by being able to • Construct paper maps to illustrate the links between geographic patterns (e.g., examine associations among geographic phenomena such as water resources and population distribution or topography and Civil War troop movements). • Construct different types of maps to illustrate the distribution of population (e.g., cartograms, choropleth maps, isopleth maps, graduated circles maps). • Construct flow maps to explain the amount, source, and direction of movement (e.g., international petroleum trade, migration of refugees, flyways of bird migration, immigration to North America dur-ing the 1800s). 3. Geospatial technologies—Internet--based mapping applications, GIS, GPS, geovisualization, and remote sensing—can be used to construct geographic representations using geospatial data *Therefore, the student is able to:* A. Construct and analyze geographic representations using data acquired from a variety of sources (e.g., student-generated data such as surveys,

	and differences in information displayed at different scales. • Analyze the different ways of symbolizing geospatial data (e.g., graduated circles, cartograms, choropleth versus isopleth maps).	observations, fieldwork, etc., or existing data files) and formats (e.g., digital databases, text, tables, images), as exemplified by being able to • Analyze environmental change by annotating a series of remotely sensed images of the same location taken at different dates. • Construct map overlays of GPS-based geospatial data using GIS (e.g., types of housing, local historical structures, neighborhood bus stops). • Construct a map displaying the results of a community survey on a local issue (e.g., locating a new park or school, stream flooding, zoning decisions). 4. The use of geographic representations to ask and answer geographic questions *Therefore, the student is able to:* A. Analyze geographic representations to ask and answer questions about spatial distributions and patterns, as exemplified by being able to • Analyze printed and digital maps to observe spatial distributions and patterns to generate and answer geographic questions (e.g., use digital census data to determine demographic patterns in a state, or analyze census data and transportation routes to identify and locate services, such as a day-care center or stores needed in a region). • Analyze choropleth maps to examine spatial relationships (e.g., between the number of doctors and mortality rates, between corn production and hog production, between global energy production and consumption). • Analyze the overlap among multiple geospatial data layers to identify potential locations of interest (e.g., site for a new park, route for a new road, location of high incidences of crimes).
2 How to use mental maps to organize information about people, places and	1. The locations and characteristics of physical and human features are the basis for mental maps at local to global scales	1. The locations, characteristics, and patterns of physical and human features are the basis for mental maps at local to

environments in a spatial context.	*Therefore, the student is able to:* A. Identify from memory the position and arrangement of physical and human features, as exemplified by being able to • Identify from memory the locations of physical and human features (landmarks) in the classroom or school setting. • Identify from memory the locations of physical or human features of interest to the student on their routes between home and school. • Identify from memory on a sketch map the locations of the setting from a favorite book or movie. 2. Mental maps can change with direct experience (such as travel) and indirect experience (such as media exposure and looking at other maps) *Therefore, the student is able to:* A. Identify from memory with increasing detail maps of a place or region, as exemplified by being able to • Identify details in a student's mental map of a route used frequently (e.g., to and from the grocery store, to and from a park, to and from a relative's home) over a period of time with an emphasis of adding details to the map. • Identify from memory on a sketch map the locations of major community landmarks or boundaries. • Identify from memory on a sketch map the locations of state physical features and the political boundaries of the student's home state before and after studying a state map. 3. Mental maps are used to answer geographic questions about locations and characteristics of places and regions *Therefore, the student is able to:* A. Identify from memory locations and geographic characteristics to answer geographic questions, as exemplified by	global scales *Therefore, the student is able to:* A. Identify from memory and describe locations, patterns, and characteristics of physical and human features, as exemplified by being able to • Identify from memory and describe the locations of state political boundaries and major physical features. • Identify from memory the locations of major land acquisitions to the United States following the settlement of the original 13 colonies, which resulted in the current political boundaries. • Identify from memory and describe the major climate and vegetation regions of the United States. 2. Mental maps can change and become more accurate with direct experience (such as travel) and indirect experience (such as media exposure and looking at other maps) *Therefore, the student is able to:* A. Identify from memory with increasing detail and accuracy mental maps of a place or region, as exemplified by being able to • Identify from memory the locations of major cities in the student's state with accuracy in both the scale and locations. • Identify from memory the locations and boundaries of all adjacent states and major cities in those states. • Identify from memory the locations of major transportation routes in the state. 3. Mental maps are used to answer geographic questions about locations, characteristics, and patterns of places and regions *Therefore, the student is able to:* A. Identify from memory and describe the

	being able to • Identify from memory the location and geographic characteristics of the most significant intersection near the student's home or school to answer geographic questions (e.g., What types of buildings are lo-cated at an important intersection near your home or school? What are the major landmarks used to help someone locate your home or school?). • Identify from memory the locations of landmarks in the school building and on the school grounds to answer geographic questions (e.g., Where is the closest fire exit to the classroom? What is the shortest route to the nurse's office? Where is the most popular playground equipment located?). • Identify from memory the map of North America to answer geographic questions (e.g., What are the countries to the north and south of the United States? Which state is located at the easternmost point of the United States? Which state is at the geographic center of the continental United States?). 4. Individuals may have different mental maps of places and regions *Therefore, the student is able to:* A. Describe how an individual's views and understandings of places and regions differ, as expressed by his or her mental map, as exemplified by being able to • Identify and describe differences in students' sketch maps of their community, including differences in details on their maps, scale, labels, location of features, etc. • Describe differences in students' understandings of a story or setting of a book based on the details in their mental maps. • Describe the differences in students' views of a popular community attraction based on the details in their mental maps.	locations, characteristics, and patterns of places and regions to answer geographic questions, as exemplified by being able to • Identify from memory and describe the patterns of coastal popu-lation density and place characteristics to explain why people may choose to live where they do in the world. • Identify from memory and describe the features that may have re-sulted in a change of route or engineering innovations in building the first US transcontinental railroad. • Identify from memory the distribution, pattern, and characteristics of major world deserts and mountain ranges that can be barriers to travel or settlement. 4. Mental maps are shaped by individual perceptions of people, places, regions, and environments *Therefore, the student is able to:* A. Compare the mental maps of individuals to identify common factors that influence spatial understanding, perceptions, and preferences, as exemplified by being able to • Compare mental maps of the state sketched by students to identify examples of spatial understanding such as scale on the maps. • Compare mental maps sketched by students of the location or re-gion of a historical event to identify the different perceptions students may have from the same information presented in the classroom. • Compare the details in mental maps sketched by students of their most preferred and least preferred state in which to live.

3. How to analyze the spatial organization of people, places, and environments on Earth's surface.	1. The meaning and use of fundamental spatial concepts such as location, distance, direction, scale, movement, region, and volume *Therefore, the student is able to:* A. Describe and explain the spatial organization of people, places, and environments (where things are in relation to other things) using spatial concepts, as exemplified by being able to • Explain the meaning of the spatial concepts of next to, behind, in front of, left, right, inside, outside, and between (e.g., moving people or desks to new locations, labeling spots in the room). • Describe the meaning of the spatial concepts of distance, direction, and location used in selected literature (e.g., read an account of Paul Revere's ride and describe it in terms of locations [start to end], movement, region of action, distance, direction). • Construct a story built on spatial concepts using directions, locations, distances, and movements in the plot (e.g., cardinal directions, relative and exact locations, real or imaginary locations, statements of distances). 2. The distribution of people, places, and environments form spatial patterns across Earth's surface *Therefore, the student is able to:* A. Describe and compare distributions of people, places, and environments to examine spatial patterns, sequences, regularities, and irregularities, as exemplified by being able to • Identify features and patterns on geographic representations or re-motely sensed images and describe the differences in the features and patterns (e.g., straight lines of roads forming a grid, curving roads in mountain areas, farmland and pastures versus the patterns of cities and suburbs). • Compare distances and populations	1. The meaning and use of spatial concepts, such as accessibility, dispersion, density, and interdependence *Therefore, the student is able to:* A. Describe the spatial organization of people, places, and environments (where things are in relation to other things) using spatial concepts, as exemplified by being able to • Describe spatial concepts, such as population density, transportation networks or linkages, and urban or city growth patterns using paper or digital maps. • Identify and describe related businesses and services needed in the vicinity of a popular vacation destination (e.g., hotels, restaurants, airport, ATM/banking for a theme park, hotels and camping equipment stores near national parks, tourist information centers in large cities, public transit options for stadiums and event centers). • Identify and describe service functions along US interstate highways using a digital globe or street-view maps (e.g., shopping malls, service stations, restaurants, hotels). 2. Processes shape the spatial patterns of people, places, and environments over time *Therefore, the student is able to:* A. Describe and compare the processes that influence the distribution of human and physical phenomena, as exemplified by being able to • Describe how changing transportation and communication technologies influence human distribution and settlement patterns using time lines, maps, and graphs (e.g., compare historic routes West, such as the Santa Fe Trail and Route 66 with current modes and routes of travel and discuss how these have influenced settlement, map the flow of emigrants to the United States by

	of towns and cities along a highway that runs through a state and look for patterns or trends (e.g., regularity of distances between towns of a certain size, the variability in distance from interstate highways between larger cities and smaller cities, sizes of towns closer or farther away from larger cities). • Describe and compare the natural features and human factors using geographic representations that may influence where people live (e.g., access to water, climatic conditions, rivers, and bridges). 3. Models are used to represent features of human and/or physical systems *Therefore, the student is able to:* A. Describe and construct models illustrating the properties of human and/or physical systems, as exemplified by being able to • Construct a model of Earth and describe its shape, size, and key features (e.g., equator, poles, prime meridian, oceans, continents). • Construct a model of the community and identify the different land uses (e.g., residential, industrial, retail). • Construct a model of a watershed linked to a model of the hydro-logic cycle and describe its key features and the interconnections to the local water supply (e.g., identify mountains, river systems, lakes, oceans, and groundwater that are a part of the system that supplies water to the local community).	ethnic group, date, factors causing emigration, ports of entry, and settlement patterns, comparing early immigration to current immigration). • Describe and compare the changes in environmental systems that cause changes in cultural, political, or economic conditions (e.g., a species becoming endangered leads to protected locations and conservation management, climate change influences emissions control legislation, depletion of a natural resource results in higher costs and effects new technologies). • Describe and compare changes in natural vegetation zones and land uses on the slopes of a mountain (e.g., vertical zonation, tree lines in middle latitudes). 3. Models are used to represent spatial processes that shape human and physical systems *Therefore, the student is able to:* A. Describe the processes that shape human and physical systems (e.g., diffusion, migration, and plate tectonics) using models, as exemplified by being able to • Describe a model that illustrates the diffusion of cultural character-istics (e.g., music styles, clothing styles, fast-food preferences). • Describe how the demographic transition model explains historic changes in population and migration patterns (e.g., industrial revolution in Europe, declining birthrates in South Korea). • Describe urban models, such as sector or ring models, using a digital globe or map (e.g., Paris as an example of a sector model, Moscow as an example of a ring model).
17 How to apply geography to interpret the past.	1. Geographic contexts (the human and physical characteristics of places and environments) are the settings for events in the past *Therefore, the student is able to:*	1. A historical event is influenced by the geographic context (the human and physical characteristics of places and environments) in which it occurred *Therefore, the student is able to:*

	A. Describe the geographic context in which a historical event occurred, as exemplified by being able to • Describe the geographic context of famous events in US history using maps and narrative accounts (e.g., read accounts of Paul Revere's ride and follow the route on a map, compare the overland and water routes to California during the 1849 gold rush). • Identify physical landforms that affected overland travel during the expansion of the United States (e.g., mountain ranges and passes, river crossings, deserts). • Identify and describe the differences between the geographic contexts of Native American original settlement areas and the current tribal reservations in the United States. 2. Places, regions, and environments change over time *Therefore, the student is able to:* A. Analyze how places, regions, and environments change over time, as exemplified by being able to • Construct a time line illustrating changes in land use, settlement, housing, and economic activities in the local community or region (e.g., the effects of migration, demographic changes, economic conditions). • Describe and analyze the change in the number of states in the United States and their boundaries. • Describe how the physical environment of a county or state was changed by processes of forest clearing, damming of rivers, cultivation of fields, or land leveling. 3. People's perceptions of the world—places, regions, and environments—changed over time *Therefore, the student is able to:* A. Describe examples of people's	A. Analyze and explain the influence of the geographic context on historical events, as exemplified by being able to • Analyze the significance of physical features that have influenced historical events (e.g., the role of hydrologic features such as the fall line, Cumberland Gap, the Ohio River, the Ogallala Aquifer, or artesian wells of the Great Plains in the settlement of the United States, the role of ocean currents and prevailing winds in exploration by Columbus, the forced transport of Africans to North and South America). • Explain how physical geographic features and levels of technology influence the course and outcome of battles and wars (e.g., weather conditions at Valley Forge and the outcome of the American Revolution, weather and beach features on D-Day during World War II, the role of the typhoon winds in the defeat of the Mongols invading Japan in the 1200s). • Describe and explain how access to the open range of the Great Plains provided the context for the expansion of the cattle industry (e.g., free grasslands for grazing, trails across open areas to railroad trailheads). 2. Change occurs in the geographic characteristics and spatial organization of places, regions, and environments *Therefore, the student is able to:* A. Describe and explain changes in the geographic characteristics and spatial organizations of places, regions, and environments in the past, as exemplified by being able to • Describe and compare population settlement patterns during different historical periods (e.g., discuss regional differences in colonial settlement patterns in North America, trace the westward expansion of the United States through land

	changing perceptions of the world, as exemplified by being able to • Describe how people might have perceived a place 50 or 100 miles away before the invention of the automobile, buses, or trains. • Describe how the reports and maps of early nautical explorers changed people's perceptions of the world (e.g., the world was not flat, the sea did not drop off into nothingness, the world could be circumnavigated). • Describe how people's perception of the environment changed over time from limitless exploitation to sustainability (e.g., pollution of rivers during industrialization, pollution of air or scarring of land from mining, depletion of American bison from overhunting).	acquisitions and government incentives for land ownership). • Analyze the changing patterns of spatial organization in an area that has been occupied by different cultures (e.g., the settlement of the Mexico City area by Aztecs, Spanish, and the modern Mexican State). • Describe the changes in the spatial organization of cities over the past 100 years (e.g., the effects of suburbanization, freeway systems, public transit, skyscrapers, shopping malls). 3. Historical events were influenced by people's perceptions of places, regions, and environments *Therefore, the student is able to:* A. Explain how historical events were influenced by people's perceptions of people, places, regions, and environments, as exemplified by being able to • Explain how geographic perceptions impacted decisions of and actions by an individual, a group, or a nation (e.g., the perception of land uses and its values leading to the creation and later dissolution of the Indian Territory in the United States, views held resulting in Australia initially being used as a penal colony, perceptions of desert regions as resource-poor changed when oil was discovered). • Analyze and explain how letters, promotional literature, advertisements, and newspapers in the 19th century shaped public perceptions of the American West and led to its settlement. • Explain how the perception of oceans as buffers on both coasts contributed to US isolationist foreign policy until 1898.
18 How to apply geography to interpret the present and plan for the future.	1. Geographic contexts (the human and physical characteristics of places and environments) are the settings for current events	1. Geographic contexts (the human and physical characteristics of places and environments) provide the basis for problem solving and planning

	Therefore, the student is able to: A. Analyze geographic contexts in which current events and issues occur, as exemplified by being able to • Describe the geographic factors that would influence the decision on where to locate a new school in the local community (available land, proximity to student populations, proximity to dangerous roads or industries). • Describe the services a city government needs to provide due to the specific geographic characteristics of the community (e.g., big snow removal equipment in lake-effect locations, frequent brake replacement for San Francisco streetcars, wind screens for tennis courts in Great Plains locations, evacuation plans in flood-prone areas). • Analyze a current environmental issue in the region (e.g., building or demolishing a dam, building or expansion of freeway system, creation of parks and open spaces, regulatory legislation on industry to prevent further air, water, and land pollution) and describe ways in which people and the environment interact to affect the issue positively and negatively. 2. Places, regions, and environments will continue to change *Therefore, the student is able to:* A. Describe current changes in places, regions, and environments and predict how these locations may be different in the future, as exemplified by being able to • Describe how to plan for the environmental future of a place by completing the following statements: "I will keep...." "I will change...." and "I will remove...." • Describe the effects that building a new subdivision might have on the local environment (e.g., loss of farms or green space, increased traffic,	*Therefore, the student is able to:* A. Describe and analyze the influences of geographic contexts on current events and issues, as exemplified by being able to • Explain the role of the geographic context in a current global conflict (e.g., boundary dispute, resource allocation, land-use issues) and identify strategies that might be used to settle the conflict. • Describe and analyze the challenges a region's physical geography offers in making policy decisions about present and future needs (e.g., planning military operations in remote or rugged areas of the world, determining the advisability of extracting natural resources from environmentally fragile areas). • Describe the geographic context and resulting challenges in monitoring and maintaining a secure southern US border. B. Describe and analyze the influences of geographic contexts on the process of planning for the future, as exemplified by being able • Identify areas in a community with potential for growth and describe the geographic considerations for planning for future transportation and city services (e.g., schools, parks, sewage treatment plants, water and energy services). • Analyze areas of a community most prone to potential flooding from rivers, thunderstorms, and storm surges and suggest possible mitigation strategies. • Analyze the current pattern of interstate highways and based on projections of population growth suggest where new highways might be needed. 2. Change occurs in the geographic characteristics and spatial organization of places, regions, and environments *Therefore, the student is able to:*

	more run off from additional paved surfaces). • Describe the effects of opening or closing schools (e.g., gain or loss of playgrounds, fewer or more students needing buses to get to school). 3. People's perceptions of the world—places, regions, and environments—are constantly changing *Therefore, the student is able to:* A. Explain how people's perceptions of the world can change with new information and new experiences, as exemplified by being able to • Describe a recent trip and explain what preconceived thoughts were about the place compared with how it turned out to be in reality. • Explain how the depiction of a place in movies or on television can affect how people perceive that place. • Describe and explain how a student's view of his or her home community can be different from someone who is only visiting the community.	A. Describe and explain current changes in the geographic characteristics and spatial organizations of places, regions, and environments and predict how they may be different in the future, as exemplified by being able to • Identify environmental issues in a region and describe the consequences of these issues on the region and the appearance of the environment in the next 30 years if no action is taken, limited action is taken, or with considerable intervention. • Describe how the increasing demand for water resources will affect the physical environment and suggest ways to replenish and conserve water resources. • Explain why the majority of emerging megacities will continue to be located in South and East Asia. 3. People's perceptions of the world affect their views of the present, and expectations about the future *Therefore, the student is able to:* A. Explain the role perception plays in planning for the present and the future, as exemplified by being able to • Identify the top five states a student would choose and not choose to live in and explain the reasons for the choices. • Explain how the views of different stakeholder groups would need to be considered in the development of a new local facility (e.g., school, park, hospital, reservoir). • Describe how changes in the economy of a community may affect personal perceptions of that place and people's plans for their futures.

Geography Skills

1 Asking Geographic Questions	1. The characteristics of a geographic question	1. The sources of geographic questions *Therefore, the student:*

	Therefore, the student: A. Identifies and describes differences between geographic and nongeographic questions, as exemplified by • Identifying examples of geographic questions from a list of both geographic and nongeographic questions (e.g., does the question ask Where is it located? Why is it there? What is the significance of the location?). • Identifying questions that help explain the importance of the fea-tures or location of places (e.g., Why are good harbor facilities an important part of New York City's location? How does Chicago's mid-continent location influence its accessibility to the rest of the United States? How does the climate of Florida's cities affect the movement of vacationing winter visitors?). • Describing how geographic questions seek information about the organization of human or physical features in space (e.g., Where do most people live in the world? Why are mountain ranges located where they are?).	A. Identifies geographic issues and constructs a question from a geographic perspective, as exemplified by • Identifying geographic issues and problems in news articles and constructing geographic questions that would address the issue from a geographic perspective (e.g., spatial or ecological perspectives). • Identifying a local environmental issue and constructing geographic questions appropriate to study the issue (e.g., What are the pros and cons of building a community water park in the desert southwest region of the United States?). • Identifying a global human population issue and constructing geographic questions to investigate the issue from multiple perspectives (e.g., What are some of the reasons why people move from rural areas in a developing country to its largest and most crowded city? What are some of the economic and environmental consequences of such migrations?).
2 Acquiring Geographic Information	1. The characteristics of geographic information *Therefore, the student:* A. Describes and analyzes the characteristics of geographic information, as exemplified by • Describing the characteristics of a place using observed and collected data (e.g., weather, climate, elevation, population density, availability of fresh water). • Analyzing data examples to determine whether or not it is geographic (e.g., Does it provide information about a location or place, connections between and among places, or the spatial organization of human or physical features on Earth's surface?). • Identifying and describing the	1. The process of collecting geographic information *Therefore, the student:* A. Explains which sources of geographic information will be needed for a geographic investigation, as exemplified by • Describing and explaining how observations and collected geographic information can be used in a geographic investigation. • Identifying and describing sources of reliable geographic data (e.g., US Census Bureau data, Population Reference Bureau data, CIA: The World Factbook). • Explaining how digital globes and maps can provide base map information to provide a context for additional data layers or themes (e.g.,

	characteristic information required for a map to be accurate and helpful (e.g., title, orientation, date, author, legend, scale, index, grid, source). 2. The sources of geographic information *Therefore, the student:* A. Identifies observations, maps, globes, and other geographic representations as sources of geographic information, as exemplified by • Identifying how satellite images provide geographic information (e.g., display patterns of population growth or decline by observing images detailing land use taken at different times, portrays contrasting shorelines of lakes in images taken at normal and drought times). • Identifying ZIP codes as a source of geographic information that is helpful at a larger scale but less so at the neighborhood or school and classroom scale. • Identifying digital globes and maps as sources of different types of geo-graphic information (e.g., terrain data or road and transportation data).	tectonic plate boundaries and the occurrence of earthquakes, identification of climate and vegetation characteristics that may contribute to increased wildfire risk, identification of human or physical features that may affect the development of an emergency situation evacuation route). 2. The distinction between primary and secondary sources of geographic information *Therefore, the student:* A. Explains the differences between primary and secondary sources of geographic information, as exemplified by • Explaining why using digital globe and mapped projects are secondary sources of geographic information. • Explaining why mapping student-observed or -collected data points on a digital globe or map is a primary source of geographic information. • Explaining the difference between using a map created by someone else versus a map created by the student as secondary and primary sources of geographic information.
3 Organizing Geographic Information	1. The different forms for displaying geographic information *Therefore, the student:* A. Constructs digital and paper maps, graphs, tables, and charts to display geographic information, as exemplified by • Constructing a map using points to represent the locations of student-collected data. • Constructing a graph to display the changes in student enrollment at the school. • Constructing a data table with represented values and a map to display the values represented by colors (e.g., list of schools in the community with more than 100, 200,	1. The advantages and disadvantages of the different forms for displaying geographic information *Therefore, the student:* A. Describes and constructs appropriate forms of visualizations to represent different types of geographic data, as exemplified by • Constructing a choropleth map representing demographic values and explaining why this type of map is an effective way to display this type of data. • Describing and explaining how isopleth lines effectively represent increasing or decreasing values between locations (e.g., rainfall amounts, elevation, growing-season

	and 300 students; different types of businesses in the community; number of each, low-, medium-, and high-population states).	zones). • Describing and constructing both point and polygon maps to represent different types of geographic data. B. Explains the advantages of using different forms of geographic representations for data, as exemplified by • Explaining why a GIS-generated map might be the best type of map to display the overlap or relational aspects of multiple data sets. • Explaining why one map projection may be more appropriate to use than other projections (e.g., amount of distortion, degree of accuracy in represented shapes of continents, focus on a hemisphere or pole). • Explaining the advantages of using graphs or maps for different types of data at different scales (e.g., climographs to represent climate data, population pyramids to represent population data, US national maps to represent state-level data, state maps to represent ZIP-code-level data).
4 Analyzing Geographic Information	1. The process of analyzing data to identify geographic relationships, patterns, and trends *Therefore, the student:* A. Analyzes simple graphs, tables, and maps using geographic data to identify relationships, patterns, and trends, as exemplified by • Constructing a graph representing geographic information from a data table to identify trends (e.g., comparing social or economic indicators between two or more countries). • Analyzing various maps to identify relationships or similarities be-tween countries or regions based on the data represented (e.g., variations in climate related to latitude, population densities related to climate, railway networks in relation to elevation or topographies).	1. The process of analyzing data to describe geographic relationships, patterns, and trends *Therefore, the student:* A. Analyzes graphs, tables, and maps using geographic data to describe relationships, patterns, and trends, as exemplified by • Analyzing two or more maps or satellite images to describe changes or identifying trends that may be evident based on the data (e.g., satellite images of a city or region before and after a tsunami, earthquake, or flood, satellite images of forests where logging is taking place, maps of census data showing changes in population). • Analyzing map legends to better understand the nature of the representation of data on the map (e.g., classification values and break

	• Analyzing the relationships and patterns between political bound-ary lines and features on maps to describe possible trends (e.g., boundaries aligned to rivers, mountain ranges, or other physical fea-tures, boundaries aligned to lines of latitude or longitude or other mathematical formulations).	points of a choropleth map, methods for determining different classification values, review the histogram of the data to see how data are represented in another form in addition to the mapped version). • Analyzing a GIS to describe the relationships and patterns resulting from the overlay of multiple data sets (e.g., describe the relationship of tornado occurrences with population density and state boundaries).
5 Answering Geographic Questions	1. The process of making generalizations and drawing conclusions to answer geographic questions *Therefore, the student:* A. Constructs answers to geographic questions using data, as exemplified by • Constructing a flowchart, map, and narrative summarizing the steps used in answering a geographic question. • Constructing a digital or paper map that answers a geographic question and describing the data used to inform the answer. • Constructing a photographic display to summarize key geographic observations based on viewing a collection of images of a place or region. 2. The methods for presenting answers to geographic questions *Therefore, the student:* A. Describes various options for presenting answers to a geographic question, as exemplified by • Describing how maps can display geographic information to help answer geographic questions. • Describing how multimedia tools can be used to present answers to geographic questions. • Identifying and describing an example of a presentation of geographic information that may answer geographic questions (e.g., map displaying an analysis from a	1. The process of explaining generalizations and conclusions that answer geographic questions *Therefore, the student:* A. Describes and explains the data and processes used to answer geographic questions, as exemplified by • Constructing an answer to a geographic question by describing the characteristics and relevance of the data used to inform the answer. • Describing how a GIS was developed and explaining why specific data layers were selected to answer a geographic question. • Explaining the steps used in answering a geographic question including how geographic information was collected, organized, and analyzed to arrive at the answer. 2. The construction of presentations to answer geographic questions *Therefore, the student*: A. Constructs a presentation to answer a geographic question, as exemplified by • Constructing a map using a GIS that displays possible answers to geographic questions (e.g., preferred site location for business or schools, possible sources and paths of pollution plumes, areas for greatest or least crime risk in an urban area). • Constructing a multimedia presentation including maps, images, and video to describe the steps and

	news article, a graph displaying data used to compare two locations).	data used to answer a geographic question (e.g., show how a geographic question was chosen, present where and how data were collected or acquired, use different visual methods for organizing, displaying, and analyzing geographic information). • Constructing an oral presentation that presents and defends the answers to a geographic question.