

COMPETENCY 1.0 KNOWLEDGE OF GEOGRAPHY

Skill 1.1 Identify and apply the five themes of geography

GEOGRAPHY involves studying location and how living things and earth's features are distributed throughout the earth. It includes where animals, people, and plants live and the effects of their relationship with earth's physical features. Geographers also explore the locations of earth's features, how they got there, and why it is so important.

What geographers study can be broken down into five themes:

Location (including relative and absolute location) – A relative location refers to the surrounding geography, e.g., "on the banks of the Mississippi River." Absolute location refers to a specific point, such as 41 degrees North latitude, 90 degrees West longitude, or 123 Main Street.

Place - A place has both human and physical characteristics. Physical characteristics include features such as mountains, rivers, and deserts. Human characteristics are the features created by human interaction with the environment such as canals and roads.

Human-Environmental Interaction - The theme of human-environmental interaction has three main concepts: 1) humans adapt to the environment (wearing warm clothing in a cold climate, for instance); 2) humans modify the environment (planting trees to block a prevailing wind, for example); 3) and humans depend on the environment (for food, water and raw materials).

Movement - The theme of movement covers how humans interact with one another through trade, communications, emigration, and other forms of interaction.

Regions - A region is an area that has some kind of unifying characteristic, such as a common language or a common government. There are three main types of regions. 1) *Formal regions* are areas defined by actual political boundaries, such as a city, county, or state. 2) *Functional regions* are defined by a common function, such as the area covered by a telephone service. 2) *Vernacular regions* are less formally defined areas that are formed by people's perception, e.g., "the Middle East," or "the South."

Geographical studies are divided into:

Regional: Elements and characteristics of a place or region

Topical: One earth feature or one human activity occurring throughout the entire world

Physical: Earth's physical features, what creates and changes them, their relationships to each other as well as to human activities

Human: Human activity patterns and how they relate to the environment including political, cultural, historical, urban, and social geographical fields of study.

Special research methods used by geographers include mapping, interviewing, field studies, mathematics, statistics, and scientific instruments.

Skill 1.2 Identify the natural processes that shape the Earth's physical and human systems.

Physical Systems

Weather is the condition of the air which surrounds the day-to-day atmospheric conditions such as temperature, air pressure, wind, moisture or precipitation (which includes rain, snow, hail, or sleet).

Climate is average weather or daily weather conditions for a specific region or location over a long or extended period of time. Studying the climate of an area includes information gathered on the area's monthly and yearly temperatures and its monthly and yearly amounts of precipitation. In addition, a characteristic of an area's climate is the length of its growing season. Four reasons for the different climate regions on the earth are differences in:

- (1) Latitude
- (2) Amount of moisture
- (3) Temperatures in land and water
- (4) Land surface.

There are many different climates throughout the earth. It is most unusual for a country to contain just one kind of climate. Regions of climates are divided according to latitudes:

Low latitudes: 30 degrees north and south of the equator

Middle latitudes: 30-60 degrees north and south of the

High latitudes: 60 degrees to the North and South Poles

The **low latitudes** are comprised of the rainforest, savanna, and desert climates. The tropical rainforest climate is found in equatorial lowlands and is hot and wet. There is sun, extreme heat, and rain—every day. Although daily temperatures rarely rise above 90 degrees F, the daily humidity is always high, leaving everything sticky and damp. North and south of the tropical rainforests are the tropical grasslands called "savannas"—the "lands of two seasons"—a winter dry season and a summer wet season. Further north and south of the tropical grasslands or savannas are the deserts. These areas are the hottest and driest parts of the earth receiving less than 10 inches of rain a year. These areas have extreme temperatures between night and day. After the sun sets, the land cools quickly dropping the temperature more than 50 degrees Fahrenheit.

The **middle latitudes** contain the Mediterranean, humid-subtropical, humid-continental, marine, steppe, and desert climates. Lands containing the Mediterranean climate are considered "sunny" lands and are found in six areas of the world: lands bordering the Mediterranean Sea, a small portion of southwestern Africa, areas in southern and southwestern Australia, a small part of the Ukraine near the Black Sea, central Chile, and Southern California. Summers are hot and dry with mild winters. The growing season usually lasts all year, and the rainfalls are during the winter months. Mediterranean climates are located between 30 and 40 degrees North and South latitude, and the land is on the western coasts.

The humid **subtropical climate** is found north and south of the tropics and is moist indeed. The areas having this type of climate are found on the eastern side of their continents and include Japan, mainland China, Australia, Africa, South America, and the United States—the southeastern coasts of these areas. An interesting feature of their locations is that warm ocean currents are found there. The winds that blow across these currents bring in warm moist air all year round. Long, warm summers; short, mild winters; and a long growing season allow for different crops to be grown several times a year. All contribute to the productivity of this climate, which supports more people than any of the other climates.

The **marine climate** is found in Western Europe, the British Isles, the U.S. Pacific Northwest, the western coast of Canada and southern Chile, along with southern New Zealand and southeastern Australia. A common characteristic of these lands is that they are near water or surrounded by it. The ocean winds are wet and warm bringing a mild rainy climate to these areas. In the summer, the daily temperatures average at or below 70 degrees F. During the winter, because of the warming effect of the ocean waters, the temperatures rarely fall below freezing.

In northern and central United States, northern China, south central and southeastern Canada, and the western and southeastern parts of the former Soviet Union is found the "**climate of four seasons**," the **humid continental climate**—spring, summer, fall, and winter. Cold winters, hot summers, and enough rainfall to grow a variety of crops are the major characteristics of this climate. In areas where the humid continental climate is found are some of the world's best farmlands (as well as important activities such as trading and mining). Differences in temperatures throughout the year are determined by the distance a place is from the coast.

The **steppe or prairie climate** is located in the interiors of the large continents like Asia and North America. These dry flatlands are far from ocean breezes and are called *prairies* or the Great Plains in Canada and the United States and *steppes* in Asia and in Russia. Although the summers are hot and the winters are cold as in the humid continental climate, the big difference is rainfall. In the steppe climate, rainfall is light and uncertain—10 to 20 inches a year, mainly in spring and summer, is considered normal. Where rain is more plentiful, grass grows; in areas of less rain, the steppes or prairies gradually become deserts. These are found in the Gobi Desert of Asia, in central and Western Australia, and in the southwestern United States, and there are smaller deserts in Pakistan and in Argentina and Africa south of the Equator.

The two major climates found in the high latitudes are "**tundra**" and "**taiga**." The word "tundra"—meaning "marshy plain"—is a Russian word and aptly describes the climatic conditions in the northern areas of Russia, Europe, and Canada. Winters are extremely cold and long. The ground is frozen most of the year, and it becomes mushy during the short summer months. Surprisingly, less snow falls in the area of the tundra than in the eastern part of the United States. However, due to the harshness of the extreme cold, very few people live there, and no crops can be raised. Despite having a small human population, many plants and animals are found there.

The "**taiga**" is the northern forest region and is located south of the tundra. In fact, the Russian word "taiga" means "forest." The world's largest forestlands are found here along with vast mineral wealth and furbearing animals. The climate is so extreme that very few people live here, not being able to raise crops due to the extremely short growing season. The winter temperatures are colder and the summer temperatures hotter than those in the tundra because the taiga climate region is farther from the waters of the Arctic Ocean. The taiga is found in the northern parts of Russia, Sweden, Norway, Finland, Canada, and Alaska with most of the lands covered with marshes and swamps.

In certain areas of the earth there exists a type of climate unique to areas with high mountains, usually different from their surroundings. This type of climate is called a "**vertical climate**" because the temperatures, crops, vegetation, and human activities change and become different as one ascends the different levels of elevation. At the foot of the mountain, a hot and rainy climate is found with the cultivation of many lowland crops. As one climbs higher, the air becomes **cooler**, the climate changes sharply, and different economic activities change, such as grazing sheep and growing corn. At the top of many mountains, snow may be found year-round.

Human Systems

Competition for control of areas of the earth's surface is a common trait of human interaction throughout history. This competition has resulted in both destructive conflict and productive cooperation. Societies and groups have sought control of regions of the earth's surface for a variety of reasons including religion, economics, politics and administration. Numerous wars have been fought over the centuries for the control of territory for each of these reasons.

At the same time, groups and societies, have peacefully worked together to establish boundaries around regions or territories that served specific purposes in order to sustain the activities that support life and social organization.

Individuals and societies have divided the earth's surface through conflict for a number of reasons:

- Domination of peoples or societies (e.g., colonialism)
- Control of valuable resources (e.g., oil)
- Control of strategic routes (e.g., the Panama Canal)

Conflicts can be spurred by religion, political ideology, national origin, language, and race. Conflicts can result from disagreement over how land, ocean, or natural resources will be developed, shared, and used. Conflicts have resulted from trade, migration, and settlement rights. Conflicts can occur between small groups of people, between cities, between nations, between religious groups, and between multi-national alliances.

Today, the world is primarily divided by political/administrative interests into state sovereignties. A particular region is recognized to be controlled by a particular government, including its territory, population, and natural resources. The only areas of the earth's surface that today are not defined by state or national sovereignty is Antarctica and portions of the world's water bodies.

Alliances are developed among nations based on political philosophy, economic concerns, cultural similarities, religious interests, and/or for military defense. Some of the most notable alliances today are:

- United Nations
- North Atlantic Treaty Organization (NATO)
- Caribbean Community
- Common Market
- Council of Arab Economic Unity
- European Union

Large companies and multi-national corporations also compete for control of natural resources for manufacturing, development, and distribution.

Throughout human history, there have been conflicts on virtually every scale over the right to divide the Earth according to differing perceptions, needs, and values. These conflicts have included tribal conflicts, urban riots, civil wars, regional wars, and world wars. While these conflicts have traditionally centered on control of land surfaces, new disputes are beginning to arise over the resources of the oceans and space.

On smaller scales, conflicts have created divisions between rival gangs, use zones in cities, water supplies, school districts, and economic divisions including franchise areas and trade zones.

The **Agricultural** Revolution, initiated by the invention of the plow, led to a complete transformation of human society by making large-scale agricultural production possible and facilitating the development of agrarian societies. During the period during which the plow was invented, the wheel, numbers, and writing were also invented. Coinciding with the shift from hunting wild game to the domestication of animals, this period was one of dramatic social and economic change.

In the beginning of the transition to agriculture, the tools that were used for hunting and gathering were adequate to the tasks of agriculture. The initial challenge was in adapting to a new way of life. Once that challenge was met, attention turned to the development of more advanced tools and sources of energy. Six thousand years ago, the first plow was invented in Mesopotamia. This plow was pulled by animals. Agriculture was now possible on a much larger scale. Soon tools were developed that made such basic tasks as gathering seeds, planting, and cutting grain faster and easier.

It also became necessary to maintain social and political stability to ensure that planting and harvesting times were not interrupted by internal discord or a war with a neighboring community. It also became necessary to develop ways to store the crop, protect it from thieves, and shield it from destruction by the elements and animals.

The ability to produce surplus crops created the opportunity to trade or barter with other communities in exchange for desired goods. Traders and trade routes began to develop between villages and cities. The domestication of animals expanded the range of trade and facilitated an exchange of ideas and knowledge.

Numerous changes in lifestyle and thinking accompanied the development of stable agricultural communities. Rather than gathering a wide variety of plants as hunter-gatherers did, agricultural communities became dependent on a limited number of plants and crops that were harvested. Subsistence became vulnerable to the weather and dependent upon planting and harvesting times. Agriculture also required a great deal of physical labor and the development of a sense of discipline. The communities became sedentary or stable in terms of location, which made the construction of dwellings appropriate. These tended to be built relatively close together, creating villages or towns. Stable communities also freed people from the need to carry everything with them as they moved from hunting ground to hunting ground. This facilitated the invention of larger, more complex tools. As new tools were developed, it began to make sense to have some specialization within the society. Skills began to have greater value, and people began to work on behalf of the community, which utilized their particular skills and abilities. Settled community life also gave rise to the notion of wealth because it was now possible to keep possessions.

Skill 1.3 Identify physical and cultural features

Physical **locations** of the earth's surface features include the four major hemispheres and the parts of the earth's continents in them. Political **locations** are the political divisions, if any, within each continent. Both physical and political locations are precisely determined in two *ways*: (1) Surveying is done to determine boundary lines and distance from other features. (2) Exact locations are precisely determined by imaginary lines of **latitude (parallels)** and **longitude (meridians)**. The intersection of these lines at right angles forms a grid, making it impossible to pinpoint an exact location of any place using any two grip coordinates.

The **Eastern Hemisphere**, located between the North and South Poles and between the Prime Meridian (0 degrees longitude) east to the International Date Line at 180 degrees longitude, consists of most of Europe, all of Australia, most of Africa, and all of Asia, except for a tiny piece of the easternmost part of Russia that extends east of 180 degrees longitude.

The **Western Hemisphere**, located between the North and South Poles and between the Prime Meridian (0 degrees longitude) west to the International Date Line at 180 degrees longitude, consists of all of North and South America, a tiny part of the easternmost part of Russia that extends east of 180 degrees longitude, and a part of Europe that extends west of the Prime Meridian (0 degrees longitude).

The **Northern Hemisphere**, located between the North Pole and the Equator, contains all of the continents of Europe and North America and parts of South America, Africa, and most of Asia.

The **Southern Hemisphere**, located between the South Pole and the Equator, contains all of Australia, a small part of Asia, about one-third of Africa, most of South America, and all of Antarctica.

Of the **seven continents**, only one contains just one entire country and is the only island continent, **Australia**. Its political divisions consist of six states and one territory: Western Australia, South Australia, Tasmania, Victoria, New South Wales, Queensland, and Northern Territory.

Africa is made up of 54 separate countries, the major ones being Egypt, Nigeria, South Africa, Zaire, Kenya, Algeria, Morocco, and the large island of Madagascar.

Asia consists of 49 separate countries, some of which include China, Japan, India, Turkey, Israel, Iraq, Iran, Indonesia, Jordan, Vietnam, Thailand, and the Philippines.

Europe's 43 separate nations include France, Russia, Malta, Denmark, Hungary, Greece, Bosnia, and Herzegovina.

North America consists of Canada, the United States of America, the island nations of the West Indies, and the "land bridge" of Middle America, including Cuba, Jamaica, Mexico, and Panama.

Thirteen separate nations together occupy the continent of **South America**, among them Brazil, Paraguay, Ecuador, and Suriname.

The continent of **Antarctica** has no political boundaries or divisions but has a number of science and research stations managed by nations such as Russia, Japan, France, Australia, and India.

The earth's surface is made up of 70% water and 30% land. Physical features of the land surface include mountains, hills, plateaus, valleys, and plains. Other minor landforms include deserts, deltas, canyons, mesas, basins, foothills, marshes and swamps. Earth's water features include oceans, seas, lakes, rivers, and canals.

Mountains are landforms with rather steep slopes at least 2,000 feet above sea level. Mountains are found in groups called mountain chains or mountain ranges. At least one range can be found on six of the earth's seven continents. North America has the Appalachian and Rocky Mountains; South America the Andes; Asia the Himalayas; Australia the Great Dividing Range; Europe the Alps; and Africa the Atlas, Ahaggar, and Drakensburg Mountains. Mountains are commonly formed by volcanic activity, or when land is thrust upward when two tectonic plates collide.

Hills are elevated landforms rising to an elevation of about 500 to 2000 feet. They are found everywhere on earth including Antarctica where they are covered by ice.

Plateaus are elevated landforms usually level on top. Depending on location, they range from being an area that is very cold to one that is cool and healthful. Some plateaus are dry because they are surrounded by mountains that keep out any moisture. An example is the Kenya Plateau in East Africa, which is very cool. The plateau extending north from the Himalayas is extremely dry while those in Antarctica and Greenland are covered with ice and snow. Plateaus can be formed by underground volcanic activity, erosion, or colliding tectonic plates.

Plains are described as areas of flat or slightly rolling land, usually lower than the landforms next to them. Sometimes called lowlands (and sometimes located along **seacoasts**), they support the majority of the world's people. Some are found inland, and many have been formed by large rivers. This results in extremely fertile soil for successful cultivation of crops and results in numerous and large settlements of people. In North America, the vast plains extend from the Gulf of Mexico north to the Arctic Ocean and between the Appalachian and Rocky Mountains. In Europe, rich plains extend east from Great Britain into central Europe and on into the Siberian region of Russia. Plains in river valleys are found in China (the Yangtze River valley), India (the Ganges River valley), and Southeast Asia (the Mekong River valley).

Valleys are land areas that are found between hills and mountains. Some have gentle slopes containing trees and plants; others have very steep walls and are referred to as canyons. One famous example is Arizona's Grand Canyon of the Colorado River, which was formed by erosion.

Deserts are large dry areas of land receiving ten inches or less of rainfall each year. Among the better known deserts are Africa's large Sahara Desert, the Arabian Desert on the Arabian Peninsula, and the desert Outback covering roughly one third of Australia. Deserts are found mainly in the tropical latitudes, and are formed when surrounding features such as mountain ranges extract most of the moisture from the prevailing winds

Deltas are areas of lowlands formed by soil and sediment deposited at the mouths of rivers. The soil is generally very fertile, and most fertile river deltas are important crop-growing areas. One well-known example is the delta of Egypt's Nile River, known for its production of cotton.

Mesas are the flat tops of hills or mountains usually with steep sides. Mesas are similar to plateaus, but smaller.

Basins are considered to be low areas drained by rivers or low spots in mountains.

Foothills are generally considered a low series of hills found between a plain and a mountain range.

Marshes and swamps are wet lowlands providing growth of such plants as rushes and reeds.

Oceans are the largest bodies of water on the planet. The four oceans of the earth are the **Atlantic Ocean**, one-half the size of the Pacific and separating North and South America from Africa and Europe; the **Pacific Ocean**, covering almost one-third of the entire surface of the earth and separating North and South America from Asia and Australia; the **Indian Ocean**, touching Africa, Asia, and Australia; and the ice-filled **Arctic Ocean**, extending from North America and Europe to the North Pole. The waters of the Atlantic, Pacific, and Indian Oceans also touch the shores of Antarctica.

Seas are smaller than the Atlantic or Pacific oceans and are partially surrounded by land. Some examples include the Mediterranean Sea found between Europe, Asia, and Africa; and the Caribbean Sea, touching the West Indies, South and Central America.

A **lake** is a body of standing water surrounded by land. The Great Lakes in North America are a good example. The deepest lake in the world is Lake Baikal in Siberia which contains as much water as all the Great Lakes put together.

Rivers, considered a nation's lifeblood, begin as very small streams, formed by melting snow and rainfall, flowing from higher to lower land, emptying into a larger body of water, usually a sea or an ocean. Examples of important rivers for the people and countries affected by and/or dependent on them include the Nile, Niger, and Zaire Rivers of Africa; the Rhine, Danube, and Thames Rivers of Europe; the Yangtze, Ganges, Mekong, Hwang He, and Irrawaddy Rivers of Asia; the Murray-Darling in Australia; and the Orinoco in South America. River systems are made up of large rivers and numerous smaller rivers or tributaries flowing into them. Examples include the vast Amazon Rivers system in South America and the Mississippi River system in the United States.

Canals are man-made water passages constructed to connect two larger bodies of water. Famous examples include the **Panama Canal** across Panama's isthmus connecting the Atlantic and Pacific Oceans and the **Suez Canal** in the Middle East between Africa and the Arabian peninsulas connecting the Red and Mediterranean Seas.

Social scientists use the term **culture** to describe the way of life of a group of people. This would include not only art, music, and literature but also beliefs, customs, languages, traditions, inventions—in short, any way of life whether complex or simple. The term geography is defined as the study of earth's features and living things as to their location, relationship with each other, how they came to be there, and why so important.

Physical geography is concerned with the locations of such earth features as climate, water, and land and how these relate to and affect each other and human activities; and what forces shaped and changed them. All three of these earth features affect the lives of all humans having a direct influence on what is made and produced, where it occurs, how it occurs, and what makes it possible. The combination of the different climate conditions and types of landforms and other surface features work together all around the earth to give the many varied cultures their unique characteristics and distinctions.

Cultural geography studies the location, characteristics, and influence of the physical environment on different cultures around the earth. Also included in these studies are comparisons and influences of the many varied cultures. Ease of travel and up-to-the-minute, state-of-the-art communication techniques ease the difficulties of understanding cultural differences making it easier to come in contact with them.

