

Canadian National Standards for Geography:  
A Standards-Based Guide to  
K–12 Geography

# The Importance of Geography<sup>1</sup>

An understanding of both physical and cultural geography is no longer an option for those who would successfully navigate twenty-first century society. Global, economic, cultural, and environmental forces increasingly shape our lives. What happens in one place affects other people and other cultures. If students are to leave school equipped to earn a decent living, enjoy the richness of life and participate responsibly in local, national and international affairs, they must learn to look at the world like geographers. A strong education in geography opens the door to an expanding array of interesting jobs and careers while enriching our lives by broadening our understanding of the world in which we live.

## Using This Guide<sup>2</sup>

Voluntary national standards for the study of geography were agreed upon in 1994 in the United States by a consensus of educators, parents and other interested citizens. These standards outline what students should know and be able to do in geography, and are organized into six “essential elements”: (1) the world in spatial terms (location); (2) places and regions; (3) physical systems; (4) human systems; (5) environment and society; and (6) the uses of geography.

This guide contains broad learning objectives and sample learning activities that are based upon these six essential elements. It provides explanations and activities that assist teachers, curriculum writers, parents and the general public to effectively integrate the geography standards into the school curriculum at all grade levels. We urge you to use this guide, to share it with friends and colleagues, and to reflect on the pressing need for a geographically literate society.

## THE SIX ESSENTIAL ELEMENTS OF GEOGRAPHY

**1 The World in Spatial Terms.** Geography studies the spatial relationships among people, places and environments. Maps reveal the complex spatial interactions that touch the lives of all citizens

**2 Places and Regions.** The identities and lives of individuals and peoples are rooted in particular places and regions, each of which has distinctive human and physical characteristics.

**3 Physical Systems.** Physical processes shape Earth’s surface and interact with plant and animal life to create, sustain and modify the cultural and natural environment. Physical systems include such things as wind and ocean currents, plate tectonics, erosion, deposition and the water.

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<sup>1</sup> *Path Toward World Literacy: A Scope and Sequence in Geographic Education K-12*, National Geographic Society; (Washington, D.C., National Geographic Society, 2000).

<sup>2</sup> *A Path Toward World Literacy: A Standards-Based Guide to K-12 Geography*, National Geographic Society; (Washington, D.C., National Geographic Society, 2000).

**4 Human Systems.** Earth's surface is shaped by human activities. The spatial organization of society is a mosaic of population movements, settlement patterns, economic activity, transportation, communication and political organizations.

**5 Environment and Society.** The physical environment has been modified by human activities. In a traditional sense, early settlers cleared the land to plant crops and graze livestock. Today, air and water pollution and the management of solid waste and hazardous materials are a serious problem. The physical environment affects human activity as well. Soil types and water availability help to determine which crops will prosper. More dramatically, natural hazards (e.g., earthquakes, hurricanes and floods) have resulted in substantial loss of life and property.

**6 The Uses of Geography.** Understanding geography content and how to use the tools and technology available for geographic study prepares citizens for life in our modern society. Individuals, businesses and government entities use geography and maps of all kinds on a daily basis. Geography students have a wide choice of interesting and rewarding career opportunities.

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**Canadian National Standards for Geography: A Standards-Based Guide to K-12 Geography**  
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# INTRODUCTION

## What is Geography?

Geography is concerned with place. Understanding the nature and causes of a real differentiation on the global surface has been the geographer's task since people first noticed differences between places.

Geography's focus is thus on the evolving character and organization of the Earth's surface, the way in which the interaction of physical and human elements creates distinctive places, and the way those places interact with or influence others in space and over time.

These concerns are not simply exercises in expanding students' encyclopedic knowledge of faraway places: while the concept of location is central to geography, the subject is much more than memorizing capes and bays, capitals and countries. Instead, its concerns go to the heart of some of the most urgent questions facing decision-makers today.

In pursuing those concerns geographers employ key questions: Where is something? Why is it there? How did it get there? How does it interact with other things? In an age of increasing concern for the quality of life we might add another: What alternatives exist? Answers to this question give geography an applied dimension that can assist decision-makers in planning and development at a variety of geographical scales.

## The Origin of Standards

Legislation of the United States Congress identifies geography as one of the core subjects for the schools of the United States. Its inclusion was the culmination of a decade of reform in geographical education in that country. The publication of *Geography for Life: National Geography Standards 1994* outlined a set of voluntary benchmarks that could be used by schools and school districts in developing their own curricula. It also reflected a plan to bring American students to internationally competitive levels to meet the demands of a new age and a different world. All the key ingredients of a modern understanding of geography were present in those standards: The World in Spatial Terms, Places and Regions, Physical Systems, Human Systems, Environment and Society, and the Uses of Geography.

The Canadian Council for Geographic Education sponsored a national symposium at Queen's University, Kingston, Ontario in January of 1998 under the title *Into the Millennium: Geographic Education for the Future*. The gathering agreed that the development of national standards for geography learning activities would be valuable to both ministry and curriculum specialists and to classroom teachers. It also agreed that the Royal Canadian Geographical Society should take the lead in organizing a national consortium to undertake this work, and that teacher training should be available to help teachers implement the standards. As the Canadian Council for Geographic Education is the education committee of the Royal Canadian Geographical Society, it would fall to the CCGE to lead the project.

Meanwhile the National Geographic Society, in the United States, had produced *A Path Toward World Literacy: A Standards-Based Guide to K-12 Geography*, accompanied by a skill sheet outlining scope and sequence for those grades. Those people engaged on the Canadian project quickly saw that the American publication could be adapted to Canadian needs; namely, geography that was conceptually sound, Canadian examples, publication in both official languages, and presentation which did not intrude upon provincial jurisdiction in curriculum.

The present document is the product of a working party that met in Ottawa on November 24-26, 2000 to adapt the American document, and to produce a document that would be teacher-friendly and ready for implementation in the classroom.

## How to Use the Guide

This guide contains standards or benchmarks for what is taught in the name of geography: it does not prescribe topics that are to be taught. Therefore, teachers should not try to cover all six organizing concepts, from Spatial Terms to the Uses of Geography, in a single lesson or unit of lessons.

It is equally important to recognize the Canadian context in which the standards are to be used. By setting standards for what is taught in the name of geography, the guide recognizes that geography in Canada is taught in a range of grades under a variety of course names and programs according to provincial jurisdiction. In this way the guide emphasizes its concern with standards recognized by geographers and not with the making of curriculum.

Finally, readers should note that topics in this guide are accompanied by page references to *Geography for Life*. They will find background information on those topics in *Geography for Life: National Geography Standards 1994* (Washington, D.C., National Geographic Society, 1994).

Stuart Semple  
Chair  
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## Grade K–1

# THE WORLD IN SPATIAL TERMS

### **Content Focus: Personal directions** (e.g., left/right, up/down, front/back)

Geography for Life: pp. 110-112: Standard (S) 3.2.B

Broad Learning Objective: Use the spatial concepts of location, distance, and direction to describe the spatial organizations of places.

Sample Learning Activities:

- ❖ Read a children’s story such as “Little Red Riding Hood” to use the concepts of relative location of places using terms such as near, far, towards, away from, next to, etc.
- ❖ Write and recite as a class the instructions to get to other locations in the school or room using terms such as near, far, towards, away from, next to, etc.
- ❖ Use blocks, sand and other materials to build 3-D models

### **Content Focus: Location in home or classroom**

Geography for Life: pp. 110-112: S3.2.B

Broad Learning Objective: Use the spatial concepts of location, distance, and direction to describe the spatial organizations of places.

Sample Learning Activities:

- ❖ As a class locate the relative location of the school to students’ homes.
- ❖ After walking to places within the school and school grounds, make observations about the location of places within and around the school.

### **Content Focus: The globe as a model of Earth**

Geography for Life: pp. 106-107: S1.1.A

Broad Learning Objective: Identify and observe the characteristics of the globe (round) as a representation of Earth.

Sample Learning Activities:

- ❖ Use the globe and pictures of Earth from space to identify similar characteristics (round).
- ❖ Describe the globe as a model of Earth (as dolls are models of people, toy cars are models of cars).
- ❖ Identify water and land on a globe.

### **Content Focus: Maps as representations of local and distant places**

Geography for Life: pp. 108-109: S2.3.A

Broad Learning Objective: Identify major physical and human features at a variety of scales (local to global) by using maps, globes, photographs (landscape, oblique) and other sources of graphic information.

Sample Learning Activities:

- ❖ Locate features of interest on photographs and simple picture maps of school and neighbourhood
- ❖ Identify physical and human features on maps and globes (e.g., mountains, water bodies, rivers, towns).
- ❖ Use own pictorial symbols on maps as needed.

## **Content Focus: Location and names of places in school and the neighbourhood**

Geography for Life: pp. 108-109: S2.1.A

Broad Learning Objective: Identify major physical and human features at a variety of scales (local to global) by using maps, globes, and other sources of graphic information.

Sample Learning Activity:

- ❖ Use symbols to locate, identify, and mark spatial features of the school and local community (e.g., cafeteria, gymnasium, shopping areas, restaurants, fire stations, schools, post offices).

## **Content Focus: Relative location (e.g., near/far, above/below)**

Geography for Life: pp. 110-11: S3.2.B

Broad Learning Objective: Use the spatial concepts of location, distance, and direction to describe the spatial organization of places.

Sample Learning Activities:

- ❖ Describe verbally the personal directions to get from one place to another.
- ❖ Follow oral directions to arrange props (e.g., boxes, dolls, or toys) in relative locations.
- ❖ Have students know their home address.

# PLACES AND REGIONS

**Content Focus: Concept of physical features** (e.g., mountains, plains, hills, oceans, islands) Geography for Life: pp. 113-114: S4.1.A

Broad Learning Objective: Describe and compare the physical characteristics of places at a variety of scales, local to global.

Sample Learning Activities:

- ❖ Observe the physical characteristics of the local community in words and sketches.
- ❖ Use cardboard, wood, clay, or other materials to make a model of a region that shows its physical characteristics (e.g., landforms, bodies of water, vegetation).

**Content Focus: Concept of human features** (e.g., cities, buildings, farms, roads, railroads) Geography for Life: pp. 113-114: S4.2.B

Broad Learning Objective: Describe and compare the human characteristics of places at a variety of scales, local to global.

Sample Learning Activities:

- ❖ Describe and compare human characteristics of the local community to answer questions such as: Where do people live? What kinds of jobs are there in a community?
- ❖ Use cardboard, wood, clay, or other materials to make a model of a community that shows its human characteristics (e.g., land-use patterns, areas of settlement, locations of community services).

**Content Focus: Description of places, what's old and what's new**

Geography for Life: pp. 115-16: S5.3.C

Broad Learning Objective: Describe changes in the physical and human characteristics of regions that occur over time and identify the consequences of such changes.

Sample Learning Activities:

- ❖ Draw, model or sketch the local community (e.g., schools, farms, other buildings, highways) in its present form.
- ❖ Have a grandparent or senior citizen speak and share old photographs or memorabilia with the children about the local area and identify changes that have taken place over their lifetime.

**Content Focus: Local Natural Environment**

Broad Learning Objective: Use your senses to discover the natural world around us.

Sample Learning Activities:

- ❖ Take discovery and nature walks together – use senses to understand the world around them.
- ❖ Share nature stories and encounters with nature.
- ❖ Develop simple collections from outside.

# PHYSICAL SYSTEMS

**Content Focus: Weather**

Geography for Life: pp. 118-119: S7.1.A

Broad Learning Objective: Identify and describe the physical processes that we observe as weather (rain, dry, sunny, cloudy, warm, cold, etc.).

Sample Learning Activities:

- ❖ Keep a classroom calendar of wind, temperature, precipitation, and general conditions over time to explain how weather in the local community changes.

## **Content Focus: Seasons**

Geography for Life: pp. 118-19: S7.3.C

Broad Learning Objective: Recognize that Earth's position relative to the Sun causes warmer and colder seasons in most parts of the world.

Sample Learning Activities:

- ❖ Use pictures to show the seasons.
- ❖ Use photographs or pictures the students have drawn to compare the seasons at different times of the year.
- ❖ Observe the same place over a year monitoring the differences and changes (e.g. tree, schoolyard, nearby woodlot).

# HUMAN SYSTEMS

**Content Focus: Culture of the local community and other communities**  
(e.g., food, clothing, housing, holidays, sports, games)  
Geography for Life: pp. 124-25: S10.1.A

Broad Learning Objective: Identify and compare the cultural characteristics of different regions and people.

Sample Learning Activities:

- ❖ Describe celebrations of the students' cultures.

**Content Focus: Land use in the local community** (e.g., farms, parks, factories, houses, stores) Geography for Life: pp. 128-29: S12.1.A

Broad Learning Objective: Describe the types of settlement and patterns of land use in the local community.

Sample Learning Activities:

- ❖ Discover where people live and the location of stores, schools and recreational facilities in the local community.
- ❖ Prepare a class map or model, demonstrating land use on the school grounds.

**Content Focus: Places where people work**  
Geography for Life: pp. 126-27: S11.1.B

Broad Learning Objective: Locate and classify economic activities.

Sample Learning Activities:

- ❖ List and classify the jobs of community members and locations of these jobs.
- ❖ Identify locations in the community where goods and services are produced or sold.

**Content Focus: Transportation networks in daily life**  
Geography for Life: pp. 126-127: S11.3.D

Broad Learning Objective: Identify the modes of transportation and communication used to move people, products, and ideas from place to place.

Sample Learning Activities:

- ❖ Identify or describe the uses of various types of transportation in the community (e.g., cars, buses, trains, trucks, bicycles).
- ❖ Read and interpret literature, which describes transportation and communication over time.

# ENVIRONMENT AND SOCIETY

**Content Focus: Introduction to resources** (e.g., food from farms, wood from trees, minerals from the ground, fish from the sea) Geography for Life: pp. 136-37: S16.3.C

Broad Learning Objective: Describe the meaning and role of resources in the student's daily life.

Sample Learning Activities:

- ❖ Put symbols on a community map to show food resources coming from farms, mineral resources from mines, and water resources from rivers.
- ❖ Identify basic natural resources (water, trees, plants, soil, air) and describe ways in which people use these resources.
- ❖ Visit a farm, supermarket, or farmer's market and build a model to show the resources used there .
- ❖ Examine and manipulate appropriate software.

**Content Focus: Impact of weather on everyday life**

Geography for Life: pp. 134-35: S15.3.C

Broad Learning Objective: Identify ways in which human activities are constrained by the physical environment.

Sample Learning Activities:

- ❖ Describe how the physical environment (weather) constrains activity in the local community, state, and region on a daily and seasonal basis (such as, snow day with school closed, sports games rained out).
- ❖ Draw pictures that illustrate the clothing that students would wear if temperatures and precipitation conditions were to be warm/sunny, cold/snowy, etc.

**Content Focus: Environmental issues** (e.g., litter and recycling)

Geography for Life: pp. 132-33: S14.3.C

Broad Learning Objective: Assess the impact of human activities on the physical environment.

Sample Learning Activities:

- ❖ Identify ways in which the physical environment is changed by human activities in the local community.
- ❖ Draw pictures showing how people have littered, damaged, or improved the local environment.
- ❖ Pick up litter in the schoolyard and on neighbourhood and nature walks.

# USES OF GEOGRAPHY

## **Content Focus: Description of places in past times**

Geography for Life: pp. 138-39: S17.1.A and B

Broad Learning Objective: Describe how the physical and human characteristics of places change over time. Show how the students' community has changed.

Sample Learning Activities:

- ❖ Observe differences in newer and older neighbourhoods.
- ❖ Interview older community members as a basis for writing a "this is how it was" story of the community and illustrate the story with maps and pictures.

## **Content Focus: Environmental problems in the present and future**

Geography for Life: pp. 140-141: 18.3.C

Broad Learning Objective: Make informed decisions regarding nature-society issues.

Sample Learning Activities:

- ❖ Describe ways that litter problems in the school and community can be resolved.
- ❖ Identify ways to reduce, reuse, and recycle (e.g., plastic milk jugs) in the classroom.

## Grades 2–3

# THE WORLD IN SPATIAL TERMS

**Content Focus: The globe as a model of Earth** (e.g., hemispheres, poles, equator)  
Geography for Life: pp. 106-107: S1.1.A

Broad Learning Objective: Identify and describe the characteristics and purposes of geographic representations, tools, and technologies.

Sample Learning Activities:

- ❖ Compare a globe with a picture or television image of the Earth and discuss similarities (round, North-South poles, oceans cover most of the surface, ice both north and south, etc.)
- ❖ Stretch a string between the local area and a distant well-known place (Ottawa, Ontario or Vancouver, BC) on the globe. If the string is made long enough, it would return to cover the exact same places on the surface of the earth as a satellite returns to cover the same points as it circles the earth.

**Content Focus: Map elements** (e.g., title, scale, symbols, legend, grid, cardinal and intermediate directions) Geography for Life: pp. 106-107: S1.1.A

Broad Learning Objective: Identify and describe the characteristics and purposes of geographic representations, tools, and technologies.

Sample Learning Activity:

- ❖ Examine a variety of maps and globes to identify and describe their basic elements (e.g., title, legend, cardinal and intermediate directions, scale, grid, ).

**Content Focus: Spatial elements of point, line, and area**

Geography for Life: pp. 110-112: S3.1.A

Broad Learning Objective: Map Earth's surface in terms of its spatial elements of point, line, and area.

Sample Learning Activity:

- ❖ Draw a map with pencil and paper that uses lines for streets, points for houses and other buildings, and shows a specific area of the local community.

**Content Focus: Relative and absolute locations**

Geography for Life: pp. 108-109: S2.2.B

Broad Learning Objective: Use a mental map to identify the locations of places.

Sample Learning Activities:

- ❖ Locate and map stores, fast foods, and gasoline stations relative to the school.
- ❖ Locate major sports fields, recreation places, relative to the school using distance and direction.

**Content Focus: Location and distribution of physical and human features**

Geography for Life: pp. 108-109: S2.3.C

Broad Learning Objective: Sketch an accurate map to answer questions about the locations of physical and human features.

Sample Learning Activities:

- ❖ Sketch a map showing the location of the local community in relation to major landmarks (e.g., a major river, city, or landform).

## **Content Focus: Local and Provincial maps and atlases**

Geography for Life: pp. 106-107: S1.4.C

Broad Learning Objective: Use geographic representations, tools, and technologies (geographic software, internet) to answer geographic questions.

Sample Learning Activities:

- ❖ Use local and Provincial maps to locate and process information.
- ❖ Make hand drawn maps showing patterns of human and physical features of places to enhance a report or presentation.

## **Content Focus: Major cities of the state**

Geography for Life: pp. 108-109: S2.1.A

Broad Learning Objective: Identify major human features in the Province using maps.

Sample Learning Activities:

- ❖ Use labels and symbols to locate and identify the major cities of the province.
- ❖ Draw a sketch map of the province and locate the major cities relative to provincial borders and other features, both physical and human.

# PLACES AND REGIONS

## **Content Focus: Concept of formal (uniform) regions**

Geography for Life: pp. 115-116: S5.1.A

Broad Learning Objective: Recognize regions on the basis of physical and human criteria.

Sample Learning Activities:

- ❖ Identify areas that are alike and different and form regions from these areas (e.g., residential neighbourhoods, parks, industrial areas, regions of dense and less dense settlement).
- ❖ Identify and describe simple physical regions in the local area (vegetation regions)

## **Content Focus: Physical and human characteristics of neighborhood and community**

Geography for Life: pp. 113-114: S4.1A and B, and S4.2.A and B

Broad Learning Objective: Describe and compare the physical and human characteristics of places at a variety of scales, local to global.

Sample Learning Activities:

- ❖ Use a variety of materials and data sources (e.g., photographs, satellite images, pictures, maps) to describe the physical and human characteristics of a region.
- ❖ Observe and describe the physical and human characteristics of the local community and compare them to characteristics of surrounding communities or of communities in other regions of the country.

## **Content Focus: Similarities and differences of local places and regions with other places and regions**

Geography for Life: pp. 115-116: S5.2.B

Broad Learning Objective: Compare and contrast regions.

Sample Learning Activities:

- ❖ Compare the ways in which one neighborhood is similar to and different from another neighborhood (e.g., house size, style of streetlight, presence of sidewalks, vegetation type, and at least one population characteristic, such as age of residents).
- ❖ Compare and contrast the students' own region with a region in another part of Canada.

## **Content Focus: Changes in places and regions over time**

Geography for Life: pp. 115-116: S5.3.C

Broad Learning Objective: Describe changes in the physical and human characteristics of regions that occur over time and identify the consequences of such changes.

Sample Learning Activities:

- ❖ Prepare a display contrasting life in a region in the past with life in the same region in the present.
- ❖ Conduct an interview with grandparents and/or other senior citizens to learn about regional change during lifetimes (e.g., transportation, shopping habits, how people earn a living, environmental conditions) and record the answers (e.g., use a tape recorder, video camcorder or write a summary).

# PHYSICAL SYSTEMS

**Content Focus: Basic components of Earth's physical systems** (e.g., landforms, water, and weather,)

Geography for Life: pp. 118-119: S7.1.A

Broad Learning Objective: Identify and describe the physical components of Earth's air, land, water and life.

Sample Learning Activities:

- ❖ Use pictures from instructional materials and hand-drawn sketches to show different components of Earth's physical systems (e.g., mountains, hills, plateaus, plains, river valleys, peninsulas, oceans, lakes, and rivers).

**Content Focus: Concept of an ecosystem** (interdependence of plants and animals)

Geography for Life: pp. 120-21: S8.1.A

Broad Learning Objective: Describe and illustrate the components of ecosystems at a variety of scales.

Sample Learning Activities:

- ❖ Illustrate a food chain, or webs of food chains, by sequentially ordering pictures or samples of a variety of living things (e.g., fungi, insects, plants, animals).
- ❖ Collect samples of components of a local ecosystem and arrange them in a diorama model of the ecosystem.

**Content Focus: Earth-Sun relationships** (day/night)

Geography for Life: pp. 118-119: S7.3.C

Broad Learning Objective: Describe how Earth's position relative to the Sun affects events and conditions on Earth.

Sample Learning Activities:

- ❖ Prepare a model or design a demonstration to show how the rotation of the Earth in relation to the Sun explains day/night.
- ❖ Explain how the length of day can influence human activities in different regions of the country (e.g., use of daylight savings time, summer and winter activities in areas in the far north, after supper playtime.).

**Content Focus: Introduction to the water cycle**

Geography for Life: pp. 118-119: S7.2.A

Broad Learning Objective: Identify and describe the basic steps in the water cycle.

Sample Learning Activities:

- ❖ Construct a model of the water cycle focusing on surface water features (e.g., rivers, lakes, oceans).
- ❖ Draw a diagram of a single raindrop moving through the water cycle.

# HUMAN SYSTEMS

## **Content Focus: Patterns of cultural traits** (e.g., language, religion, family structure)

Geography for Life: pp. 124-125: S10.2.B

Broad Learning Objective: Describe and compare patterns of culture across Earth.

Sample Learning Activities:

- ❖ After reading several children's books about different cultures, describe and compare the variety of languages, religions, and families.
- ❖ List and compare common elements of culture (food, shelter, clothes).

## **Content Focus: Patterns of land use and economic activity in the community** (e.g., agricultural, industrial, commercial, residential, educational, recreational)

Geography for Life: pp. 128-129: S12.1.A

Broad Learning Objective: Describe the types of settlement and patterns of land.

Sample Learning Activities:

- ❖ Compare housing and land use in urban and suburban areas, noting similarities and differences (e.g., where people live, where services are provided, where products are made, types of housing, yard size, population density, transportation, facilities, presence of infrastructure elements such as sidewalks and streetlights).
- ❖ Read narratives and poems about a type of community unlike that of the student (e.g., an urban community if the student lives in a rural area) and then summarize the differences and similarities in a chart.

## **Content Focus: Political units and hierarchies** (e.g., differences between community, city, municipality, province, country)

Geography for Life: pp. 128-129: S12.4.B

Broad Learning Objective: Locate clusters of settlement and suggest the reasons for their distribution.

Sample Learning Activities:

- ❖ Investigate two or more regions to suggest probable reasons for similarities and differences in population size (e.g., length of settlement, environment and resources, cultural traditions, historic events, accessibility).
- ❖ Use maps to locate major communities in the students' region and explain the processes that have caused them to grow.

## **Content Focus: Transportation (people and goods) and communication networks**

Geography for Life: pp. 126-127: S11.3.D

Broad Learning Objective: Identify the modes of transportation and communication used to move people, goods, and ideas from place to place.

Sample Learning Activities:

- ❖ List and describe the advantages and disadvantages of different modes of transportation for specific products and purposes (e.g., barges and trains for heavy items, airplanes for high-cost perishables, pipelines for liquids and gases, bicycles, light-rail systems, and cars for urban community).
- ❖ Prepare a then-and-now chart showing how transportation and communication have changed. (e.g., with improved roads and refrigerated trucking more fresh fruits and vegetables are available out of season; regional, national, and global markets expand as transportation and communication systems improve).

## **Content Focus: Human settlement patterns** (e.g., rural, urban, suburban)

Geography for Life: pp. 128-129: S12.1.A

Broad Learning Objective: Describe the types of settlement and patterns of land use in the Canada.

Sample Learning Activities:

- ❖ Compare housing and land use in urban and suburban areas, noting similarities and differences (e.g., types of housing, yard size, population density, transportation facilities, presence of infrastructure elements such as sidewalks and streetlights).
- ❖ Read narratives and poems about a type of community unlike that of the student (e.g., an urban community if the student lives in a rural area) and then summarize the similarities and differences on a chart.

**Content Focus: Changes in culture** (e.g., spread of ideas, people, goods)

Geography for Life: pp. 124-125: S10.3.C

Broad Learning Objective: Describe changes in culture.

Sample Learning Activities:

- ❖ Use interviews with parents and grandparents to understand cultural change.
- ❖ By visiting museums, pioneer villages etc. use historical data, primary and secondary documents, illustrations, and other sources of information to describe changes in a cultural characteristic (e.g., the role of children in society, clothing styles, modes of transportation, food preferences, types of housing).

# ENVIRONMENT AND SOCIETY

## **Content Focus: Physical environment influences human activities**

(e.g., availability of water, climate, fertility of soils)

Geography for Life: pp. 132-133: S14.1.A

Broad Learning Objective: Describe ways in which people depend on the physical environment.

Sample Learning Activity:

- ❖ Make a list of things that people need, want, and obtain from the physical environment (e.g., food, clean air, water, and mineral resources) and identify those that are obtained from the physical environment in the students' community, region, state, and from other countries.
- ❖ Write a story comparing how people in the local community and people elsewhere depend on the physical environment.

## **Content Focus: Human activities change Earth** (e.g., agriculture, transportation, industry) Geography for Life: pp. 132-133: S14.2.B

Broad Learning Objective: Identify ways in which humans alter the physical environment.

Sample Learning Activities:

- ❖ List examples in changes of land use in the local community (e.g., changing from open land to farmland, from one type of farming to another, from farms to houses and stores, from factories and other industrial uses to abandonment).
- ❖ Use story books to show how and why people alter the physical environment (e.g., by creating irrigation projects, clearing land to make room for houses and shopping centers, planting crops, and building roads).

## **Content Focus: Earth's natural resources** (e.g., minerals, air, water, land)

Geography for Life: pp. 136-137: S16.3.C

Broad Learning Objective: Describe the meaning and role of resources in the students' daily life.

Sample Learning Activities:

- ❖ Make a list of consumer products used in the local community (e.g., soft drinks, bread, compact discs, baseball bats) and connect each one with the resources used to make them.

## **Content Focus: Environmental issues** (e.g., solid waste, water quality)

Geography for Life: pp. 132-133: S14.3.C

Broad Learning Objective: Assess both the positive and negative impact of human activities on the physical environment.

Sample Learning Activity:

- ❖ Identify ways that the local community disposes of waste, cares for parks, gets water etc.
- ❖ Begin/maintain a classroom recycling project (Bluebox, composting, worm cultures, etc)
- ❖ Develop a natural habitat on the school grounds.

# USES OF GEOGRAPHY

## **Content Focus: Physical and human characteristics of how places change over time**

Geography for Life: pp. 138-139: S17.1.A

Broad Learning Objective: Describe how physical and human characteristics of places change over time.

Sample Learning Activities:

- ❖ Examine housing styles in students' region over time.
- ❖ Prepare a now-and-then chart that shows the changes in population and/or land use over time.
- ❖ Read storybooks that deal with change over time.

## **Content Focus: Spatial dimensions of geographical problems**

Geography for Life: pp. 140-141: S18.3.C

Broad Learning Objective: Make informed decisions regarding nature-society issues.

Sample Learning Activities:

- ❖ Participate in community projects that help to improve the natural environment (stream clean-ups, garbage pitch-in, habitat restoration project).

## Grades 4-5

# THE WORLD IN SPATIAL TERMS

### **Content Focus: Location of major human and physical features on Earth**

Geography for Life: pp. 146-47: S2.1.A

Broad Learning Objective: Identify the locations of certain physical and human features and events on maps and globes and answer related geographic questions.

Sample Learning Activities:

- ❖ Identify the locations of culture hearths (e.g., Mesopotamia, Huang Ho, the Yucatán Peninsula, the Nile Valley).
- ❖ Mark continents, oceans and major landforms, and climate regions on a map.

### **Content Focus: Physical/political maps of the province, Canada and the World**

Geography for Life: pp. 144-145: S1.2.B

Broad Learning Objective: Develop and use different kinds of maps, atlases, globes, graphs, charts, databases, and models.

Sample Learning Activities:

- ❖ Use data and a variety of symbols and colours to create thematic maps and graphs of various aspects of the students' local community, province, country, and the world (e.g., patterns of population, disease, economic features, rainfall, vegetation).
- ❖ Design a map that displays selected physical and political information of the province and Canada using symbols explained in a key.

### **Content Focus: Latitude, longitude, and the global grid**

Geography for Life: pp. 106-107: S1.3.A and C

Broad Learning Objective: Identify and describe the characteristics and purposes of geographic representations, tools, and technologies.

Sample Learning Activities:

- ❖ Use a map grid (e.g., latitude and longitude or alphanumeric system) to determine the absolute location of places chosen by the teacher and students (e.g., Provincial Roadmap).
- ❖ Design a map that displays information selected by the students, using symbols explained in a key.

### **Content Focus: Time zones**

Geography for Life: pp. 144-145: S1.2.B

Broad Learning Objective: Develop and use different kinds of maps, atlases, globes, graphs, charts, databases, and models.

Sample Learning Activity:

- ❖ Construct a model depicting Earth-Sun relationships and use it to explain Earth's rotation and time zones.

### **Content Focus: Mental maps**

Geography for Life: pp. 108-109: S2.3.D

Broad Learning Objective: Describe selected geographic features on the basis of using mental maps.

Sample Learning Activities:

- ❖ Sketch a map and write a brief summary from memory of the distribution of physical and human features in different regions of the province and Canada.
- ❖ Prepare a sketch map to indicate approximate locations of places, both local and global, featured in a newspaper or television story.

**Content Focus: Spatial graphics** (e.g., air photos, satellite images, various map types and atlases) Geography for Life: pp. 106-107: S1.1.A

Broad Learning Objective: Identify and describe the characteristics and purposes of geographic representations, tools, and technologies.

Sample Learning Activities:

- ❖ Interpret aerial photographs or satellite-produced images to locate and identify physical and human features (e.g., mountain ranges, rivers, vegetation regions, cities, dams, reservoirs).
- ❖ Construct maps, diagrams, or charts to display spatial information (e.g., construct a bar graph that compares populations of the five largest cities in the province and Canada).

**Content Focus: Provinces and Territories of Canada**

Geography for Life: pp. 146-47: S2.2.B

Broad Learning Objective: Use mental maps to answer geographic questions

Sample Learning Activities:

- ❖ Use mental maps of place location to list the provinces and territories through which a person would travel between two points (e.g., Iqaluit to Halifax, Vancouver to Thunder Bay Paris to Moscow, Cairo to Nairobi, Rio de Janeiro to Lima).
- ❖ Draw sketch maps of different regions and compare them with atlas maps to determine the accuracy of place location and knowledge (e.g., political maps of Canada).

**Content Focus: Major cities of the province and Canada**

Geography for Life: pp. 146-47: S2.2.C

Broad Learning Objective: Draw sketch maps from memory and analyze them.

Sample Learning Activities:

- ❖ Translate a mental map into sketch form to illustrate relative location and size of major cities in the local province and Canada, and distances between them.
- ❖ Prepare a sketch map of the student's local community to demonstrate knowledge of the transportation infrastructure that links the community with other places (e.g., approximate locations of major highways, rivers, airports, railroads).

## PLACES AND REGIONS

**Content Focus: Physical and human characteristics of places and regions within the province and Canada**

Geography for Life: pp. 152-153: S5.1.A

Broad Learning Objective: Identify the criteria used to define a region.

Sample Learning Activities:

- ❖ Identify relationships between the physical and human characteristics of a region (e.g., the Annapolis Valley known for apples).
- ❖ Identify the criteria used to determine regions (e.g., landforms, vegetation, water basins, headquarters of a sales region, trade centers).

## **Content Focus: Changes in places and regions over time**

Geography for Life: pp. 152-153: S5.2.C

Broad Learning Objective: Explain how regions change over space and time.

Sample Learning Activities:

- ❖ Use maps, graphs, satellite-produced images, or tables to make inferences about the causes and effects of changes over time in physical landscapes (e.g., forest cover, water distribution, temperature fluctuations).

## **Content Focus: Perceptions of places and regions**

Geography for Life: pp. 154-155: S6.1.A

Broad Learning Objective: Evaluate the characteristics of places and regions from a variety of points of view.

Sample Learning Activities:

- ❖ Assess a place or region from the points of view of various types of people—a homeless person, a business person, a taxi driver, a police officer, or a tourist.
- ❖ Compare ways in which people of different cultural origins define, build, and name places and regions (e.g., street names in new subdivisions and names given to places and regions to symbolize an event or principle or honor a person or cause).

## **Content Focus: Regions defined by multiple criteria**

Geography for Life: pp. 152-153: S5.1.A

Broad Learning Objective: Identify the criteria used to define a region.

Sample Learning Activities:

- ❖ Give examples of regions at different spatial scales (e.g., regions within cities, provinces, countries, and continents).
- ❖ Compare and contrast the students' own region with a region in another province, country, or continent.

# PHYSICAL SYSTEMS

## **Content Focus: Physical processes shape Earth's features and patterns**

(e.g., weathering, erosion, deposition, plate tectonics, continental drift)

Geography for Life: pp. 118-19: S7.2.B

Broad Learning Objective: Explain how physical processes help to shape features and patterns on Earth's surface.

Sample Learning Activities:

- ❖ Describe the physical environment of the students' own region and the physical processes that act on it (e.g., weather, tectonic forces, wave action, freezing and thawing, gravity, soil building processes).
- ❖ Compare and interpret maps and photographs to explain how physical processes affect features of Earth's surface (e.g., the effects of climate and weather on vegetation, erosion and deposition on landforms, mudslides on hills).

## **Content Focus: Concept of an ecosystem at different scales**

Geography for Life: pp. 158-159: S8.1.A

Broad Learning Objective: Explain the distribution of ecosystems from local to global scales.

Sample Learning Activities:

- ❖ Describe ecosystems from local to global scales and the differences between them, using photographs and other media as illustrations.
- ❖ Explain how and why ecosystems differ from place to place as a consequence of differences in soils, climates, and human and natural disturbances.

## **Content Focus: Earth-Sun relationships** (e.g., rotation—day/night; revolution—seasons; energy balance; tides)

Geography for Life: pp. 156-57: S7.2.C

Broad Learning Objective: Explain how Earth-Sun relationships affect Earth's physical processes and create physical patterns.

Sample Learning Activities:

- ❖ Use models to demonstrate how Earth-Sun relationships affect Earth's energy balance.
- ❖ Demonstrate how the earth's tilt and orbit around the sun causes seasons.

## **Content Focus: Climate types**

Geography for Life: pp. 118-19: S7.1.A

Broad Learning Objective: Identify and describe the physical components of Earth's atmosphere, lithosphere, hydrosphere, and biosphere.

Sample Learning Activities:

- ❖ Identify and describe different climates in terms of precipitation and temperature and the types of plants and animals associated with each, using pictures, maps, and graphs.
- ❖ Construct and analyze climate graphs for selected places and suggest reasons for similarities and differences in climates.

## **Content Focus: Hydrologic cycle** (precipitation, evaporation, condensation)

Geography for Life: pp. 156-157: S7.1.B

Broad Learning Objective: Analyze physical patterns in terms of the processes that created them.

Sample Learning Activities:

- ❖ Use diagrams and conduct simple experiments to demonstrate the role of precipitation, evaporation, and condensation in the hydrologic cycle.
- ❖ Use maps, diagrams and models to show how orographic rainfall is created.

**Content Focus: Extreme natural events** (e.g., floods, hurricanes, earthquakes, tornadoes) Geography for Life: pp. 156-57: S7.4.E

Broad Learning Objective: Predict the consequences of a specific physical process operating on Earth's surface.

Sample Learning Activities:

- ❖ Predict the effects of an extreme weather phenomenon on the physical environment (e.g., flood's impact on the Flood Plain).
- ❖ Predict the potential outcome of the continued movement of Earth's tectonic plates (e.g., continental drift, earthquakes, volcanic activity).

# HUMAN SYSTEMS

## **Content Focus: Patterns and processes of migration past and present**

(push/pull and diffusion) Geography for Life: pp. 122-123: S9.3.C

Broad Learning Objective: Compare the causes and effects of human migration.

Sample Learning Activities:

- ❖ Read narratives describing a variety of migrations in different regions of the Canada and then discuss the reasons for each migration (e.g., a voluntary move such as the move of a family to a larger apartment closer to a school, Ukrainian migration to Canadian Prairies).
- ❖ Explain and compare past and current patterns of rural-urban migration in Canada.

## **Content Focus: Population characteristics of the province and Canada** (e.g., density, distribution, growth rates) Geography for Life: pp. 122-123: S9.2.A

Broad Learning Objective: Describe the spatial distribution of population.

Sample Learning Activities:

- ❖ Study a map of Canada showing population distribution and densities and then write an account suggesting how differences in distribution and density are related to location (e.g., population density – 90% of Canada's population lives within 300 km of the Canada/U.S. boundary).
- ❖ Use population statistics to create line graphs.

## **Content Focus: Human settlement patterns and land use**

Geography for Life: pp. 128-29: S12.1.A

Broad Learning Objective: Describe the types of settlement and patterns of land use in Canada and world regions.

Sample Learning Activities:

- ❖ Prepare written comparisons of past and present types of settlements and settlement patterns in Canada and other countries (e.g., seigniorial system vs. townships).
- ❖ Read narratives and poems about a type of community unlike that of the student (e.g., an urban community if the student lives in a rural area) and then summarize the similarities and differences on a chart.

## **Content Focus: Cultural regions** (e.g., religion, language, ethnicity)

Geography for Life: pp. 124-25: S10.2.B

Broad Learning Objective: Describe and compare patterns of culture across Earth.

Sample Learning Activities:

- ❖ Develop a display using thematic maps, briefly describing culture regions (e.g., ethnic origin, language, religion, food preferences).
- ❖ Describe visible cultural elements in the students' local community or in another community (e.g., distinctive building styles, billboards or newspaper advertisements in another language).

## **Content Focus: Types of economic activity** (resources, manufacturing, service)

Geography for Life: pp. 164-66: S11.1.A

Broad Learning Objective: List and define the major terms used to describe economic activity in a geographic context.

Sample Learning Activity:

- ❖ Define and map three economic activities in Canada (e.g., farming, manufacturing, and retailing respectively).

## **Content Focus: Development of transportation and communication networks**

Geography for Life: pp. 164-166: S11.4.G

Broad Learning Objective: Compare and evaluate the roles of historical and contemporary systems of transportation and communication in the development of economic activities.

Sample Learning Activities:

- ❖ Compare the transportation and communications systems of the present with those of the past in terms of factors such as quality, efficiency, and speed.
- ❖ Make some general conclusions about how innovations in transportation and communications affect patterns of economic interaction (e.g., the effect of refrigerated railroad cars, air-freight services, pipelines, telephone services, fax transmission services, satellite-based communications services).

## **Content Focus: Provincial and Interprovincial commerce**

Geography for Life: pp. 164-166: S11.4.C

Broad Learning Objective: Analyze and evaluate issues related to the spatial distribution of economic activities.

Sample Learning Activities:

- ❖ Analyze the change and impacts on a community when a large industry or other economic activity leaves or arrives (e.g., closure of Sydney coal mines and Pacific coast salmon fishery; opening of Toyota in Cambridge, ON).
- ❖ Identify the locations of economic activities in the students' own community, or another community, and evaluate their impact on the surrounding area.

# ENVIRONMENT AND SOCIETY

**Content Focus: Human modification of the physical environment** (e.g., construction of dams, mining, draining wetlands)  
Geography for Life: pp. 132-133: S14.2.B

Broad Learning Objective: Identify ways in which humans alter the physical environment.

Sample Learning Activities:

- ❖ Use maps and graphs to illustrate changes in the physical environment of the local community or region brought about by processes such as urban growth, the development of transportation and agriculture, and the introduction of new species of plants and animals.
- ❖ Prepare an illustrated booklet that shows how and why people alter the physical environment (e.g., by creating irrigation projects, clearing the land to make room for houses and shopping centres, planting crops, building roads).

**Content Focus: Human adaptation to the physical environment** (e.g., use of air conditioning, irrigation, agricultural activities)  
Geography for Life: pp. 134-135: S15.1.A

Broad Learning Objective: Describe how humans adapt to variations in the physical environment.

Sample Learning Activities:

- ❖ Develop a collage of pictures that depict how people in the province adapt to their physical environment at different times of the year (e.g., clothing, heating and cooling of homes, planting of crops in appropriate seasons)
- ❖ Describe and compare the traditional ways of life of different groups of First Nations who lived in different areas of Canada. Draw conclusions about how they adapted to natural resources available (e.g., dependence of the Plains people on bison, the Iroquois on crops produced by fertile soils of the Great Lakes St. Lawrence Lowlands, dependence on fishing of people in the Pacific Northwest).

**Content Focus: Renewable (e.g., land, forests, water) and nonrenewable (e.g., minerals, fossil fuels) resources**  
Geography for Life: pp. 136-137: S16.1.A

Broad Learning Objective: Locate and differentiate between renewable and nonrenewable.

Sample Learning Activities:

- ❖ Design and conduct a survey of students, family, and other members of the community to measure resource use in the school, home, and community on a typical day and classify the resources as renewable (e.g., timber), or nonrenewable (e.g., petroleum).
- ❖ Put symbols on a base map to identify the location of sources of nonrenewable resources (e.g., fossil fuels, minerals) and explain how each resource is used in the local community and province or territory.

**Content Focus: Impact of extreme natural events (e.g., earthquakes, tornadoes, floods, hurricanes, volcanic eruptions, mudslides) on the human and physical environment**

Geography for Life: pp. 134-135: S15.3.D

Broad Learning Objective: Locate and describe natural hazards in the physical environment.

Sample Learning Activities:

- ❖ Compare the hazards posed by extreme natural events in the students' physical environment with those that occur in similar environments elsewhere in terms of their location, magnitude, frequency, and effect on people.
- ❖ Collect data on the occurrence of natural hazards in the students' province and elsewhere in North America over time to create a map titled: "Location of Types of Natural Hazards in North America from Month to Month."

**Content Focus: Environmental issues (e.g., water supply, air quality, solid waste)**

Geography for Life: pp. 136-137: S16.3.D

Broad Learning Objective: Identify and evaluate critical present-day issues related to the use of resources.

Sample Learning Activities:

- ❖ Given a list of human activities, students identify and discuss in writing which activities have the greatest potential to damage the environment and suggest solutions to counteract the damage.
- ❖ List the advantages and disadvantages of recycling and reusing different types of materials.

# USES OF GEOGRAPHY

## **Content Focus: Influences of physical and human features on historical events**

Geography for Life: pp. 179-180 S17.3.C

Broad Learning Objective: Analyze the effects of physical and human geography on historic events.

Sample Learning Activities:

- ❖ List, map, and discuss major waterways, springs, and other hydrologic features that have been significant in settlement of Canada (e.g., St. Lawrence River, Great Lakes, St. Lawrence Seaway, Gardiner Dam).
- ❖ Use maps to identify different land-survey systems used in Canada and assess the role they have played in establishing contemporary landscape patterns (e.g., long lot system in Québec, rectangular system in Ontario, square township system of Prairies).

## **Content Focus: Interaction of physical and human systems and influence on current and future conditions**

Geography for Life: pp. 181-182: S18.1.A

Broad Learning Objective: Analyze the interaction between physical and human systems to understand possible causes and effects of current conditions on Earth and to speculate on future conditions.

Sample Learning Activities:

- ❖ Compare life in a variety of cities in countries that are economically less developed to assess the relationships involved in economic, political, social, and environmental changes.
- ❖ Evaluate the geographic impact of using petroleum, coal, nuclear power, and solar power as major energy sources in the twenty-first century.

## Grades 6–8

# THE WORLD IN SPATIAL TERMS

### **Content Focus: Distribution of major human and physical features at country and global scales**

Geography for Life: pp. 146-147: S2.1.A

Broad Learning Objective: Identify the location of certain physical and human features and events on maps and globes and answer related geographic questions.

Sample Learning Activities:

- ❖ Identify the locations of cultural cradles (e.g., Québec, Mesopotamia, Huang Ho, the Yucatán Peninsula, the Nile Valley).
- ❖ Mark major ocean currents, wind patterns, landforms, and climate regions on a map.

### **Content Focus: Map types** (e.g., topographic, navigational, thematic)

Geography for Life: pp. 144-145: S1.1.A

Broad Learning Objective: Describe the essential characteristics and functions of maps and geographic representations, tools, and technologies.

Sample Learning Activities:

- ❖ Describe the purposes and distinguishing characteristics of selected map projections, globes, aerial photos, and satellite images.
- ❖ Use data and a variety of symbols and colours to create thematic maps and graphs of various aspects of the local community, province, territory, country, and the world (e.g., patterns of population, disease, rainfall, vegetation).

### **Content Focus: Locational technology (GPS and GIS)**

Geography for Life: pp. 144-145: S1.3.D

Broad Learning Objective: Use geographic tools and technologies to pose and answer questions about spatial distributions and patterns on Earth.

Sample Learning Activities:

- ❖ Use a computer and geographic database to develop maps and flowcharts showing major patterns of movement of people and commodities (e.g., international trade in petroleum, countries that produce and those that consume resources, mapping quality of life indices, choropleth mapping, cartograms, population pyramids).
- ❖ Use maps produced by geographic information systems to understand patterns of movement in space and time (e.g., mapping weather phenomena over several seasons, mapping the spread of influenza throughout the world).

### **Content Focus: Major countries of the World**

Geography for Life: pp. 146-47: S2.2.B

Broad Learning Objective: Use mental maps to answer geographic questions

Sample Learning Activities:

- ❖ Use mental maps of place location to list the countries through which a person would travel between two points (e.g., Paris to Moscow, Cairo to Nairobi, Rio de Janeiro to Lima).
- ❖ Draw sketch maps of different regions and compare them with atlas maps to determine the accuracy of place location and knowledge (e.g., political maps of Canada, the United States, and Europe).

## **Content Focus: Major cities of the province, Canada and the World**

Geography for Life: pp. 146-47: S2.2.C

Broad Learning Objective: Draw sketch maps from memory and analyze them.

Sample Learning Activities:

- ❖ Translate a mental map into sketch form to illustrate relative location and size of major cities in the local province and Canada, and distances between them.
- ❖ Prepare a sketch map of the local community to demonstrate knowledge of the transportation infrastructure that links the community with other places (e.g., approximate locations of major highways, rivers, airports, railroads).

## **Content Focus: Expanding mental maps**

Geography for Life: pp. 146-147: S2.3.D

Broad Learning Objective: Analyze ways in which people's mental maps reflect their attitude towards places.

Sample Learning Activities:

- ❖ Analyze sketch maps produced by different people on the basis of their mental maps and draw inferences about the factors (e.g., culture, education, age, sex, occupation, experience) that influence those people's perceptions of places.
- ❖ Compare passages from fiction to reach conclusions about the human perception of places (e.g., the Arctic as isolated, Florida as exciting, Africa as a mosaic of countries, Calcutta as densely settled).

## **Content Focus: Map projections** (e.g., size, shape, distance, and direction)

Geography for Life: pp. 144-145: S1.3.C

Broad Learning Objective: Evaluate the relative merits of maps and other geographic representations, tools, and technologies in terms of their value in solving geographic problems.

Sample Learning Activities:

- ❖ Evaluate the merits of using specific map projections for specific purposes (e.g., use of the Mercator projection for navigation, the Robinson projection for depicting general world views, and a conic projection for Canada).
- ❖ Choose the most appropriate maps and graphics in an atlas to answer specific questions about geographic issues (e.g., topography and transportation routes).

# PLACES AND REGIONS

## **Content Focus: Physical and human characteristics of places and regions in Canada and the world**

Geography for Life: pp. 150-151: S4.1.A and 2.B

Broad Learning Objective: Analyze the physical and human characteristics of places.

Sample Learning Activities:

- ❖ Use field observation, maps, and other tools to identify and compare the physical characteristics of places (e.g., soils, landforms, vegetation, wildlife, climate, natural hazards).
- ❖ Use photographs to develop and test hypotheses about similarities and differences in cultural landscapes (e.g., street scene in Vancouver/Québec/Toronto versus scenes in Hong Kong/Paris/New York).

## **Content Focus: Factors that influence people's perceptions of places and regions**

Geography for Life: pp. 154-155: S6.2.B

Broad Learning Objective: Explain how technology affects the ways in which cultural groups perceive and influence places and regions.

Sample Learning Activities:

- ❖ Identify examples of advertising designed to influence cultural attitudes toward regions and places (e.g., the use of urban settings in music videos, use of mountain landscapes in automobile commercials).
- ❖ Trace the role of technology in changing cultural groups' perceptions of their physical environments (e.g., the snowmobile's impact on the lives of Inuit people in Nunavut and the impact of use of ATV's on the environment).

## **Content Focus: Changes in places and regions over time**

Geography for Life: pp. 152-153: S5.2.C

Broad Learning Objective: Explain how regions change over space and time.

Sample Learning Activities:

- ❖ Use maps and other graphics to show regional change from decade to decade and how such changes affect the characteristics of places (e.g., a Canadian Census Metropolitan Area around 1900 versus today and the Aral Sea region in Kazakhstan in the 1930s versus today).
- ❖ Explain the factors that contribute to changing regional characteristics (e.g., economic development, accessibility, migration, technological change).

## **Content Focus: How culture affects places and regions (e.g., cultural landscapes)**

Geography for Life: pp. 154-155: S6.2.C and D

Broad Learning Objective: Identify ways culture influences people's perceptions of places and regions; and illustrate and explain how places and regions serve as cultural symbols.

Sample Learning Activities:

- ❖ Give examples of how, in different regions of the world, religion and other belief systems influence traditional attitudes toward land use (e.g., the Hutterites on land use in the Prairies).
- ❖ Identify songs associated with specific regions and identify the kinds of images such songs suggest (e.g., "Mon pays c'est l'hiver", "This Land is My Land", "Maple Leaf Forever" with Canada or "Waltzing Matilda" with Australia; or "The Volga Boat Song" with Russia).

## **Content Focus: Concepts of formal, functional, and perceptual regions**

Geography for Life: pp. 152-153: S5.1.B

Broad Learning Objective: Identify types of regions.

Sample Learning Activities:

- ❖ Compare and contrast criteria for formal regions (e.g., provinces & territories of Canada, municipalities) and functional regions (e.g., the marketing area of the Vancouver Sun in B.C., the “fan-shed” of a professional sports team).
- ❖ Suggest criteria for and examples of perceptual regions (e.g., the ski regions in B.C. and Alberta, the Maritimes in eastern Canada, the Riviera in southern France).

## **Content Focus: World political regions**

Geography for Life: pp. 152-153: S5.1.A and D

Broad Learning Objective: Identify the criteria used to define a region.

Sample Learning Activities:

- ❖ Use maps and other data to identify political boundaries of major political systems (e.g., democracy, one-party state, communism).
- ❖ Evaluate the meaning and impact of regional labels (e.g., Middle East, former Soviet Republics, European Union).

## **Content Focus: World cultural regions**

Geography for Life: pp. 154-155: S6.2.B

Broad Learning Objective: Explain how technology affects the ways in which cultural groups perceive and influence places.

Sample Learning Activities:

- ❖ Explain how technology influences the ways in which humans use land (e.g., irrigation practices in arid lands, hydroelectric projects, air conditioning and heating demands).

# PHYSICAL SYSTEMS

## **Content Focus: Physical processes shape patterns in the physical environment**

Geography for Life: pp. 156-157: S7.1.A

Broad Learning Objective: Use physical processes to explain patterns in the physical environment.

Sample Learning Activities:

- ❖ Account for the patterns of features associated with the margins of tectonic plates such as earthquake zones and volcanic activity (e.g., the Ring of Fire around the Pacific Ocean, the San Andreas fault in coastal California, the Great Rift Valley in Africa).
- ❖ Explain how erosional agents such as water and ice produce distinctive landforms (e.g., water and badlands, ice and glacial valleys, waves and sea cliffs).

## **Content Focus: Ecozones** (major ecological communities such as boreal forest, polar regions, grassland, wetlands, desert) Geography for Life: pp. 158-159: S8.1.A

Broad Learning Objective: Explain the distribution of ecosystems from local to global scales.

Sample Learning Activities:

- ❖ Identify and explain major ecological communities (e.g., forests, deserts, wetlands, grasslands) and the differences between them, using photographs and other media as illustrations.
- ❖ Identify and explain changes resulting from human intervention in the ecozone(s) in which the students live.

## **Content Focus: Global patterns of wind and water**

Geography for Life: pp. 156-157: S7.1.B

Broad Learning Objective: Analyze physical patterns in terms of the processes that created them.

Sample Learning Activities:

- ❖ Use appropriate maps to generalize about the relationships between physical processes (e.g., the relationships between ocean currents, prevailing winds, and atmospheric pressure cells).
- ❖ Describe the ocean circulation system and the way it affects the climate (e.g., the difference between the climates of the west and east coasts of Canada).

## **Content Focus: River systems of Canada and the world**

Geography for Life: pp. 156-57: S7.1.A

Broad Learning Objective: Use physical processes to explain patterns in the physical environment.

Sample Learning Activity:

- ❖ Map major river systems of Canada and the world and analyze their watershed drainage patterns.

**Content Focus: Types of precipitation** (orographic, cyclonic, convectional)

Geography for Life: pp. 156-57: S7.1.B

Broad Learning Objective: Analyze physical patterns in terms of the processes that created them.

Sample Learning Activity:

- ❖ Draw diagrams or construct simple models to demonstrate the processes that create orographic, cyclonic, and convectional precipitation.

**Content Focus: Implications of the hydrologic cycle** (hydrogeology, surface water, drought, floods, watersheds) Geography for Life: pp. 158-59: S8.3.B

Broad Learning Objective: Explain the functions and dynamics of ecosystems.

Sample Learning Activity:

- ❖ Explain how the functions and dynamics of the hydrologic cycle influence such things as hydrogeology, surface water, droughts, floods, and watersheds.

**Content Focus: Causes and patterns of extreme natural events** (e.g., floods, forest fires, hurricanes, earthquakes, tornadoes) Geography for Life: pp. 156-57: S7.4.E

Broad Learning Objective: Predict the consequences of a specific physical process operating on the Earth's surface.

Sample Learning Activities:

- ❖ Predict the effects of an extreme weather phenomenon on the physical environment (e.g., a forest fire's impact on a forest ecosystem).
- ❖ Predict the potential outcome of the continued movement of Earth's tectonic plates (e.g., earthquakes, volcanic activity, tsunamis and continental drift).

# HUMAN SYSTEMS

## **Content Focus: Population density, distribution, and growth rates**

Geography for Life: pp. 160-161: S9.1.B

Broad Learning Objective: Analyze the population characteristics of places to explain population patterns.

Sample Learning Activities:

- ❖ Create population pyramids for different countries and organize them into groups based on similarities of age characteristics.
- ❖ Demonstrate an understanding of demographic concepts (e.g., birthrate, death rate, population growth rate, life expectancy, average family size, le taux de fécondité) and explain how population characteristics differ from country to country.

## **Content Focus: Demographic transition of a country**

Geography for Life: pp. 160-161: S9.1.A

Broad Learning Objective: Describe the structure of different populations through the use of key demographic concepts.

Sample Learning Activities:

- ❖ Explain changes that occur in the structure (age and gender) of a population over time (e.g., Canada).
- ❖ Compare Canada and an economically less developed country using natural increase, crude birth rate, crude death rate and infant mortality.

## **Content Focus: Human migration patterns (forced/voluntary)**

Geography for Life: pp. 160-161: S9.3.D

Broad Learning Objective: Describe ways in which human migration influences the character of a place.

Sample Learning Activities:

- ❖ Explain how the movement of people can alter the character of a place (e.g., Chinese settling in Vancouver, brain drain, mine closure).
- ❖ Explain how the forced movement of people (e.g., First Nations to reservations in 1755) has influenced various regions of Canada.

## **Content Focus: Types and patterns of human settlement (from villages to megacities)**

Geography for Life: pp. 167-168: S12.2.B

Broad Learning Objective: Identify the factors involved in the development of cities.

Sample Learning Activities:

- ❖ Describe the kinds of settlements that existed before cities emerged (e.g., stopping places on routes of hunters and gatherers, isolated farmsteads, villages).
- ❖ List and explain the reasons why people would choose to change from a dispersed rural to a concentrated urban form of settlement (e.g., the need for a marketplace, religious needs, or military protection).

## **Content Focus: Internal structure of cities**

Geography for Life: pp. 167-168: S12.4.E

Broad Learning Objective: Identify and define the internal spatial structures of cities.

Sample Learning Activities:

- ❖ Using the concentric zone model of a city, explain how a nearby city reflects that model (e.g., central city has the highest buildings, general decrease in density away from the center).

- ❖ Using the sector model of a city, aerial photos and municipal zoning maps explain how a nearby city reflects that model (e.g., manufacturing areas in a sector, financial and professional services in a sector, and residential zones located away from those two sectors have distinctive neighbourhoods).

### **Content Focus: Cities as providers of goods and services**

Geography for Life: pp. 167-168: S12.3.D

Broad Learning Objective: Explain the causes and consequences of urbanization.

Sample Learning Activities:

- ❖ Brainstorm with students to form a list of the attractions that draw people to urban centres; then group the list into cultural, social, political, and economic categories (e.g., health facilities, major shopping centres, entertainment, higher education, employment).
- ❖ Describe the consequences of urbanization (e.g., poverty, pollution, loss of arable land).

### **Content Focus: Processes of cultural diffusion**

Geography for Life: pp. 162-163: S10.3.C

Broad Learning Objective: Describe and explain the significance of patterns of cultural diffusion in the creation of Earth's varied cultural mosaics.

Sample Learning Activities:

- ❖ Investigate the worldwide use of a technological advancement and explain the cultural significance of this technology (e.g., automobile, computer, telephone).

### **Content Focus: Patterns of culture in Canada and the world**

(e.g., religion, language, ethnicity, economy) Geography for Life: pp. 162-163: S10.1.A

Broad Learning Objective: Identify ways in which communities reflect the cultural background of their inhabitants.

Sample Learning Activities:

- ❖ Find evidence in the students' own community, or another community, of immigration from different regions of the world (e.g., use telephone directories to find lists or surnames, ethnic restaurants, stores, social clubs, toponomy).
- ❖ Describe visual cultural elements in the students' own local community or in another community (e.g., distinctive building styles, billboards or newspaper advertisements in another language).

### **Content Focus: Regional development in Canada and in the world**

Geography for Life: pp. 164-166: S11.3.C

Broad Learning Objective: Analyze and evaluate issues related to the spatial distribution of economic activities.

Sample Learning Activities:

- ❖ Identify the location of economic activities in the students' own community, or another community, and evaluate their impact on surrounding areas.
- ❖ Analyze the economic and social impact on a community when a large factory or other economic activity leaves and moves to another place (e.g., mine closure in N. Ontario, textile factories to Asia, auto parts manufacturers to the U.S. and Mexico).
- ❖ Develop a list of cultural elements that have been adopted by Canadians from other countries (e.g., foods, music, clothing, architecture).

### **Content Focus: Transportation and communication networks in Canada and the world**

Geography for Life: pp. 164-166: S11.4.G

Broad Learning Objective: Compare and evaluate the roles of historical and contemporary systems of transportation and communication in the development of economic activities.

Sample Learning Activities:

- ❖ Compare the transportation and communication systems of the present to those of the past in terms of factors such as quality, efficiency, and speed (e.g. postal services vs. e-mail).
- ❖ Make some general conclusions about how innovation in transportation and communication affects patterns of economic interaction (e.g., the effect of refrigerated railroad cars, air-freight services, pipelines, telephone services, fax transmission services, satellite-based communications systems).

**Content Focus: Types and patterns of economic activity** (primary, secondary, tertiary, quaternary) Geography for Life: pp. 164-166: S11.1.B

Broad Learning Objective: Explain the spatial aspects of systems designed to deliver goods and services.

Sample Learning Activities:

- ❖ Diagram the movement of a product (e.g., a toothpick, plastic apple juice bottle) from raw material manufacture to consumer.
- ❖ Use data to demonstrate the distribution of employees by economic activity (e.g., create a graph to show the number of employees in primary, secondary etc. activities).

**Content Focus: Global economic interdependence** (trade, commerce, and communication) Geography for Life: pp. 164-166: S11.2.D

Broad Learning Objective: Identify and explain why world trade occurs.

Sample Learning Activities:

- ❖ Explain why countries trade (e.g., trade advantages associated with Chinese textiles, Jamaican sugar, American fresh fruits and vegetables).
- ❖ Identify and map international trade flows (e.g., bananas from Guatemala, automobiles from South Korea moving to Europe and North America, crude oil from the Middle East, wheat from Canada).

**Content Focus: Territorial dispute and conflict**  
Geography for Life: pp. 169-170: S13.2.B

Broad Learning Objective: Explain why people cooperate but also engage in conflict to control Earth's surface.

Sample Learning Activities:

- ❖ Explain the reasons for conflict over the use of land and propose strategies to shape a cooperative solution (e.g., try to resolve the controversies surrounding proposals to convert farmland to residential use, build entertainment facilities on national parkland, or set up a recycling center in a neighbourhood).
- ❖ Identify and explain the factors that contribute to conflict within and between countries (e.g., Great Lakes and fresh water disputes, fishing between Canada and foreign nations).

# ENVIRONMENT AND SOCIETY

## **Content Focus: Effects of human modification of the physical environment** (e.g., global warming, deforestation, desertification, urbanization)

Geography for Life: pp. 171-172: S14.1.A

Broad Learning Objective: Analyze the consequences of humans changing the physical environment.

Sample Learning Activities:

- ❖ Assess the environmental impact of modifying natural wetlands for agricultural, recreational and residential use (e.g., Prairies for agricultural use, Southern Ontario, Maritimes, Holland).
- ❖ Speculate on the environmental consequences of a major long-lasting energy crisis (e.g., high/low crude oil prices).

## **Content Focus: Impact of natural and technological hazards/disasters on the human and physical environment**

Geography for Life: pp. 173-175: S15.3.C

Broad Learning Objective: Describe the effects of natural hazards on human systems.

Sample Learning Activities:

- ❖ Rank hazards posed by extreme natural events based on the degree of impact on people and the physical environment (e.g., loss of life, destruction of property, economic impact, alteration of ecosystems).
- ❖ Describe the relationship between humans and hazards posed by extreme natural events in different regions of Canada and the world. For example, how the level of economic development and technology influences the effect of floods on populations in Bangladesh compared with populations in Canada or the United States, or how an earthquake in the U.S. affects the population compared with populations in Turkey.

## **Content Focus: Perceptions of and reactions to extreme natural events**

Geography for Life: pp. 173-175: S15.3.C

Broad Learning Objective: Describe how humans prepare for natural hazards.

Sample Learning Activity:

- ❖ Explain the ways humans prepare for natural hazards (e.g., earthquakes, floods, tornadoes, snow storms).

## **Content Focus: Limits and opportunities of the physical environment for human activities**

Geography for Life: pp. 173-175: S15.2.B

Broad Learning Objective: Explain how the characteristics of different physical environments affect human activities.

Sample Learning Activities:

- ❖ Collect information on ways in which people adapt to living in different physical environments. Write vignettes summarizing how the physical environment affects life in each region (e.g., how people in other high-latitude places deal with the characteristics of tundra environments, such as frost heaves, spring snowmelt floods, freezing of public utilities, very short growing seasons, infertile soils and bogs that impede transportation).
- ❖ Compare population distribution maps with environmental quality maps (resource distribution, rainfall, temperature, soil fertility, landform relief, and carrying capacity) and describe the associations between population density and environmental quality. (e.g., Windsor, Québec axis, Fraser Delta, Nunavut)

## **Content Focus: World patterns of resource distribution and utilization**

Geography for Life: pp. 176-178: S16.1.A

Broad Learning Objective: Describe and analyze world patterns of resource distribution and utilization.

Sample Learning Activities:

- ❖ Map the world patterns of such resources as petroleum, coal, copper, iron ore, water in terms of the location of major deposits.
- ❖ Analyze differences in the world use of major resources in the last century.

## **Content Focus: Changes in the importance of energy resources**

Geography for Life: pp. 176-178: S16.4.F

Broad Learning Objective: Explain the critical importance of energy resources to the development of human societies.

Sample Learning Activities:

- ❖ Identify the ways in which coal, petroleum, natural gas, water and uranium contribute to the functioning of societies (e.g., through providing power for transportation, manufacturing, the heating and cooling of buildings).
- ❖ Explain how the development and widespread use of alternative energy sources, such as solar, wind, biomass, and geo-thermal energy, might have an impact on societies (e.g., the impacts on air and water quality, on existing energy industries, on current manufacturing practices such as automobile production).

## **Content Focus: Watershed management**

Geography for Life: pp. 171-172: S14.2.B

Broad Learning Objective: Identify and explain the ways in which human-induced changes in the physical environment in one place can cause changes in other places.

Sample Learning Activities:

- ❖ Explain how the construction of dams and levees on river systems in one region affects places downstream (e.g. the availability of water for human use, generation of electricity, changes in ecosystems and animal migration patterns).
- ❖ Use maps and aerial photos of the streams and rivers of Canada to show areas where human activity has resulted in modifications to the physical environment (e.g., Fraser River, Mississippi River).
- ❖ Analyze how human activity influences fresh water supplies (e.g., Walkerton, ON).

## **Content Focus: Environmental issues** (e.g., air pollution, water pollution, and solid waste, including hazardous and toxic materials) Geography for Life: pp. 171-172: S14.2.B

Broad Learning Objective: Identify and explain the ways in which human-induced changes in the physical environment in one place can cause changes in other places.

Sample Learning Activity:

- ❖ Explain how pollution of the air and water in one place can affect other places (e.g., the effect of a factory's airborne emissions on air quality in communities located downwind; how acid rain affects ecosystems located downwind as in southern Québec and James Bay; the effect of pesticides washed into river systems across the Prairies on water quality in communities located downstream).

# USES OF GEOGRAPHY

## **Content Focus: Effects of physical and human geographic factors on major historic events**

Geography for Life: pp. 179-180: S17.3.C

Broad Learning Objective: Analyze the effects of physical and human geography on major historic events.

Sample Learning Activity:

- ❖ Use maps to identify different land-survey systems used in Canada and assess the role they have played in establishing contemporary landscape patterns (e.g., compare the history and landscape of a long lot (rang) system in Québec with a township land-survey system in the Prairies and a concession system in Ontario).

## **Content Focus: Role of multiple points of view in contemporary geographic policies and issues**

Geography for Life: pp. 181-182: S18.2.B

Broad Learning Objective: Integrate multiple points of view to analyze and evaluate contemporary geographic issues.

Sample Learning Activity:

- ❖ Role play to describe how immigrants feel to be in that situation, how they perceive their home, and how they adjust to life in an alien environment (in order to appreciate the significance of people's beliefs, attitudes, and values in environmental adaptation).
- ❖ Analyze a geographic issue and then develop recommendations for specific actions (e.g., landfill site, managing a forest).
- ❖ Develop innovative plans, including specific recommendations illustrated by maps to improve the quality of environments in large cities (e.g. green spaces, transportation routes, bicycle lanes).

## Grades 9–12

# THE WORLD IN SPATIAL TERMS (LOCATION)

**Content Focus: Map, globe, and atlas use** (e.g., observing and analyzing relationships)

Geography for Life: pp. 184-185: S1.3.B

Broad Learning Objective: Use maps and other geographic representations to analyze world events and suggest solutions to world problems.

Sample Learning Activities:

- ❖ Use several different maps to account for selected consequences of human/environment interaction (e.g., the impact of a tropical storm on a coral island, the draining of wetlands on bird and marine life, desertification on human settlement, encroachment onto agricultural lands in the Okanagan Valley, BC or the Niagara Fruit Belt, Ontario)
- ❖ Develop maps, tables, graphs, charts, and diagrams to depict the geographic implications of current world events (e.g., maps showing changing political boundaries and tables showing the distribution of refugees from areas affected by natural disasters).

**Content Focus: Expanding locational technology** (including remote sensing, GPS, and GIS) Geography for Life: pp. 184-185: S1.3.C

Broad Learning Objective: Evaluate the application of geographic tools and supporting technologies to serve particular purposes.

Sample Learning Activities:

- ❖ Choose and give reasons to use specific technologies to analyze selected geographic problems (e.g., aerial photographs, satellite-produced imagery, geographic information systems [GIS], and geographic positioning system [GPS] to determine the extent of water pollution in a harbor complex in South Africa, the range of deforestation in the Stein Valley, BC, the and the extent of damage due to the 1998 ice storm in Québec and Ontario).
- ❖ Use electronic sources such as the Internet and CD databases to provide evidence regarding the central role of maps to study and explore Earth throughout history (e.g., maps made by early navigators and by such explorers as David Thompson, the La Vérendrye brothers, and Jacques Cartier).

**Content Focus: Map projections for specific applications**

Geography for Life: pp. 186-187: S2.3.C

Broad Learning Objective: Use map projections to identify common factors that affect the development of spatial understanding and preferences.

Sample Learning Activities:

- ❖ Compare maps of the world using different projections and perceptions of space (e.g., a map centered on the Pacific Ocean, a world map with Australia at the top, a Canadian map based on a polar projection) to draw conclusions about factors that influence mental maps.
- ❖ Evaluate the merits of using specific map projections for specific purposes (e.g., use of the Mercator projection for navigation and the Robinson projection for depicting areal distributions).

**Content Focus: Location/allocation situations** (e.g., the best location for a fast food outlet and the extent of its market area, the best location for a hospital and the area it serves)

Geography for Life: pp. 188-189: S3.4.D

Broad Learning Objective: Apply concepts and models of spatial organization to make decisions.

Sample Learning Activity:

- ❖ Explain why there are advantages for retailers to locate in malls rather than in dispersed locations (e.g., The West Edmonton Mall bring many large and small stores together in close proximity which takes advantage of sharing costs for parking lots, lighting, and other utilities while providing convenience and time efficiency for customers).
- ❖ Explain the recent shift in retail shopping from original CBDs or suburban shopping centres to retail parks such as Bayer's Lake Park as part of the multiple nuclei model of development.

## **Content Focus: Mental maps and spatial relationships**

Geography for Life: pp. 186-187: S2.1.A

Broad Learning Objective: Use maps drawn from memory to answer geographic questions.

Sample Learning Activity:

- ❖ Prepare a sketch map to illustrate the spatial dynamics of contemporary and historical events (e.g., the spread of the bubonic plague in fourteenth-century Europe or the historical development of population centres and settlement patterns in Canada).
- ❖ Illustrate the spatial dynamics of contemporary and historical events.(e.g., the importance of the Great Lakes–St. Lawrence system on development of the urban and industrial heartland of central Canada).
- ❖ Have students develop mental maps of where they would expect major fishing or farming regions to be in Canada or mining areas to get a mental map image of the Canadian Shield.

# PLACES AND REGIONS

## **Content Focus: Physical and human processes shape places and regions**

Geography for Life: pp. 190-191: S4.3.A and D

Broad Learning Objective: Evaluate how humans interact with physical environments to form places.

Sample Learning Activities:

- ❖ Explain why places have specific physical and human characteristics in different parts of the world (e.g., the effects of climate, tectonic processes, settlement and migration patterns, site and situation components).
- ❖ Evaluate the effects of population growth and urbanization on places (e.g., air pollution in Mexico City, Los Angeles, and the Greater Toronto Area; the loss of farmlands to rapidly growing urban areas such as the Niagara Fruit Belt in Ontario and Vancouver and the lower mainland of BC).

## **Content Focus: The importance of places and regions to individual and social identity**

Geography for Life: pp. 195-196: S6.1.A

Broad Learning Objective: Explain why places, nations, and regions are important to individual human identity and as symbols for unifying or fragmenting society.

Sample Learning Activities:

- ❖ Interpret how people express attachment to places and regions (e.g., by reference to essays, novels such as “Anne of Green Gables”, poems, and short stories such as “the Sweater”, feature films, works of art such as paintings by the Group of Seven, or traditional musical compositions with origins representative of each of Canada’s regions).
- ❖ Identify how places take on symbolic meaning (e.g., Jerusalem as a holy city for Muslims, Christians, and Jews; the Plains of Abraham as a symbol of the French and English tensions in Québec, the War Memorial in Ottawa, Ontario as places to honour the war dead of Canada).

## **Content Focus: Changes in places and regions over time**

Geography for Life: pp. 192-94: S5.3.C

Broad Learning Objective: Identify human and physical changes in regions and explain the factors that contribute to those changes.

Sample Learning Activities:

- ❖ Use maps to illustrate how regional boundaries change (e.g., changes resulting from shifts in population, environmental degradation, or shifts in production and market patterns such as the addition of the territory of Nunavut to the map of Canada).
- ❖ Explain factors that contribute to the dynamic nature of regions (e.g., human influences such as migration, technology, resource depletion, and capital investment in Canada’s East coast fisheries and the “Dust Bowl” in the Prairie regions of Canada; physical influences such as long-term climate shift and seismic activity).

## **Content Focus: Interdependence of places and regions**

Geography for Life: pp. 192-194: S5.3.E

Broad Learning Objective: Interpret the connections between and within the parts of a regional system.

Sample Learning Activity:

- ❖ Explain some of the relationships existing between and within regions (e.g., the links involving neighborhoods within a city; municipalities within a metropolitan area, such as the amalgamation issues in the Greater Toronto Area; or power blocs within a defence or economic alliance, such as Canada’s role in NATO, NAFTA, and the Commonwealth).

## **Content Focus: Political and historical characteristics of regions**

Geography for Life: pp. 192-194: S5.1.C

Broad Learning Objective: Identify human and physical changes in regions and explain the factors that contribute to those changes.

Sample Learning Activities:

- ❖ Identify some of the reasons for changes in the world's political boundaries (e.g., the frequently changing political boundaries of Poland over the centuries owing to Poland being partitioned by stronger neighbors; the creation of landlocked states, such as Bolivia as a result of wars; or territorial issues resulting from disputes about access to resources).
- ❖ Explain why regions once characterized by one set of criteria may be defined by a different set of criteria today (e.g., the Caribbean Basin's transition from a major sugarcane and hemp producer to a center for tourism or Moncton, New Brunswick's gradual conversion from a region based on primary industry in the nineteenth and early twentieth centuries to a high technology commercial centre in the late 1980's and 1990's)

## **Content Focus: Critical issues and problems of places and regions**

Geography for Life: pp. 195-196: S6.2.A and B

Broad Learning Objective: Explain why places and regions are important to individual identity and as symbols for unifying or fragmenting society.

Sample Learning Activity:

- ❖ Explain how point of view influences a person's perception of place (e.g., how various ethnic groups have a point of view about what constitutes an ideal residential landscape; how an environmentalist and real estate developer would be likely to differ on the best use for environmentally sensitive land, such as Algonquin Park in Ontario or Stanley Park in BC; and the sensitive nature of Native land claims in Canada).

Broad Learning Objective: How individuals view places and regions on the basis of their stage of life, gender, social class, ethnicity, values, and belief systems.

Sample Learning Activity:

- ❖ Discuss how the values and belief systems of a group of people influence their points of view about a place or a region (e.g., Traditional Native values of the Cree Indians of Québec in the La Grande Hydro Electric Power project).

## **Content Focus: Regional analysis of geographic issues and questions**

Geography for Life: pp. 192-194: S5.4.F

Broad Learning Objective: Use regions to analyze geographic issues and answer geographic questions.

Sample Learning Activity:

- ❖ Identify and explain the criteria that gave regions their identities in different periods of Canadian history and world history (e.g., The battle of Batoche in 1885, the Nile Valley in the age of the pharaohs, India in the age of moguls, the Pacific rim in the late twentieth century).

# PHYSICAL SYSTEMS

**Content Focus: Components of Earth's physical system** (atmosphere, lithosphere, biosphere, and hydrosphere) Geography for Life: pp. 197-198: S7.1.D

Broad Learning Objective: Describe the ways in which Earth's physical processes are dynamic and interactive.

Sample Learning Activity:

- ❖ Explain the relationships between changes in landforms and the effects of climate (e.g., the erosion of the Badlands in Alberta, deposition of loess sediments in the Prairie regions, the destruction of Frank, Alberta).

**Content Focus: Plate tectonics/continental drift**

Geography for Life: pp. 197-198: S7.3.D

Broad Learning Objective: Describe the ways in which Earth's physical processes are dynamic and interactive.

Sample Learning Activities:

- ❖ Construct a simple model of tectonic plates to demonstrate how continental drift is a dynamic physical process.(e.g., subduction of the Juan de Fuca plate under the North American plate on the BC coast).
- ❖ Explain why the features of the ocean floor are evidence of the dynamic forces that shape continents and ocean basins. (e.g., sea floor spreading along the Mid-Atlantic Ridge).

**Content Focus: World patterns of extreme events**

Geography for Life: pp. 197-198: S7.1.A

Broad Learning Objective: Describe how physical processes affect different regions of the Canada and the world.

Sample Learning Activities:

- ❖ Explain how extreme physical events affect human settlements in different regions (e.g., the destructive effects of hurricanes in the Caribbean Basin and the eastern United States, the ice storms in Eastern Canada, and earthquakes in Turkey, Japan, and Nicaragua).
- ❖ Use maps to illustrate how such natural events as floods and tornadoes can alter landscapes (e.g., the impact of the Saguenay River flood in 1996 or Red River floods of the summer of 1998, the tornado in Pine Lake, Alberta; changes along the Florida coast caused by Hurricane Andrew in 1992).

**Content Focus: Global ocean and atmospheric systems**

Geography for Life: pp. 197-198: S7.2.B

Broad Learning Objective: Explain Earth's physical processes, patterns, and cycles using concepts of physical geography.

Sample Learning Activity:

- ❖ Explain the effect of different physical cycles (e.g., the hydrological cycle) on the physical environment of Earth.

### **Content Focus: World climate regions**

Geography for Life: pp. 197-198: S7.1.B

Broad Learning Objective: Identify the world's climatic regions according to Koppen and explain the physical processes that have created the world's unique climate patterns and cycles.

Sample Learning Activity:

- ❖ Explain the distribution of different types of climate (e.g., marine climate or continental climate) that is produced by such processes as air-mass circulation, temperature, and precipitation..
- ❖ Map the effect that land masses and mountain ranges have on creating climatic regions such as the rain shadow effect on the Canadian Prairies.

### **Content Focus: World patterns of biodiversity**

Geography for Life: pp. 199-200: S8.2.B

Broad Learning Objective: Evaluate ecosystems in terms of their biodiversity and productivity .

Sample Learning Activity:

- ❖ Characterize ecosystems by their level of biodiversity and productivity (e.g., the low productivity of deserts and the high productivity of mid-latitude and tropical forests) and describe their potential value to all living things (e.g., as a source of oxygen, food, and raw materials).
- ❖ Analyze ecozones characteristics in the establishment of Canada's National and Provincial parks (e.g., Banff National Park in Alberta)

### **Content Focus: Inter-annual climate variation**

Geography for Life: pp. 197-198: S7.3.D

Broad Learning Objective: Describe ways in which Earth's physical processes are dynamic and interactive.

Sample Learning Activity:

- ❖ Explain the conditions that cause changes in climate and consequent effects on ocean levels, agricultural productivity, and population distribution (e.g., the destructive effects of El Niño).

# HUMAN SYSTEMS

## **Content Focus: Population characteristics by world regions, country, and regions within countries**

Geography for Life: pp. 201-202: S9.1.B

Broad Learning Objective: Analyze population issues and propose policies to address such issues.

Sample Learning Activities:

- ❖ Evaluate past and present government policies designed to change a country's population characteristics (e.g., the ongoing policies to limit population growth in China, analysis of the evolution of Canada's Immigration Policy over time).
- ❖ Analyze how government population policies are linked to economic and cultural considerations (e.g., people's belief systems, people's food traditions, the country's need for more or fewer workers).
- ❖ Analyze the Newfoundland government's policy to close the outports in the late 1960's and early 1970's.

## **Content Focus: Demographic transition**

Geography for Life: pp. 201-202: S9.1.B

Broad Learning Objective: Analyze population issues and propose policies to address such issues.

Sample Learning Activity:

- ❖ Analyze and compare population characteristics of countries and regions with reference to demographic transition (e.g., the current stage of demographic transition for France compared with Nigeria or Newfoundland compared with Québec).
- ❖ Analyze the impact of the aging Baby Boomer generation on Canada's social, economic, and political systems (e.g., Canadian Health Care).

## **Content Focus: Impact of human migration**

Geography for Life: pp. 201-202: S9.2.D

Broad Learning Objective: Evaluate the impact of human migration on physical and human systems.

Sample Learning Activities:

- ❖ Describe how large-scale rural-to-urban migration affects Canadian cities (e.g., suburban development, lack of adequate housing, stress on infrastructure, difficulty in providing such city services as police and fire protection).
- ❖ Describe the socio-economic changes that occur in regions that gain population and in regions that lose population (e.g., the expansion of population and jobs in Alberta and the concurrent decline in parts of British Columbia during the 1990s and 2000).

## **Content Focus: Changes in human settlement patterns over time (from villages to megacities)**

Geography for Life: pp. 208-209: S12.4.E

Broad Learning Objective: Evaluate the physical and human impacts of emerging urban forms in the present-day world.

Sample Learning Activity:

- ❖ Identify urban forms that characterize recent changes in urban structure (e.g., the rise of megalopolis, edge cities, metropolitan corridors such as the Québec-Windsor Axis).

## **Content Focus: Internal structure of cities in developed and developing countries**

Geography for Life: pp. 208-209: S12.2.C

Broad Learning Objective: Classify the characteristics of settlements in developing or developed countries.

Sample Learning Activities:

- ❖ Identify the characteristics of cities in developing countries and compare them to those of cities in developed countries in terms of physical features, site, situation, function, internal structure, and other geographic factors.
- ❖ Compare the efficiency of alternative urban structures in providing basic services in developing and developed countries (e.g., the travel distance to schools, shopping areas, health-care facilities).

## **Content Focus: Convergence and divergence of cultures**

Geography for Life: pp. 203-205: S10.3.E

Broad Learning Objective: Explain the spatial processes of cultural convergence and divergence.

Sample Learning Activities:

- ❖ Analyze how communication and transportation technologies that contribute to cultural convergence may also stimulate cultural divergence (e.g., how culture groups use such technologies to reinforce nationalistic or ethnic elitism or cultural separateness and independence, such as Québec nationalism or Native land claims).
- ❖ Evaluate examples of the spread of culture traits that contribute to cultural convergence (e.g., U.S.-based fast-food franchises in Russia and Eastern Europe; the English language as a major medium of communication for scientists and business people in many regions of the world; the popularization of Chinese food in many countries).

## **Content Focus: Economic development by world region, country, and regions within countries**

Geography for Life: pp. 206-207: S11.1.A

Broad Learning Objective: Classify and describe the spatial distribution of major economic systems and evaluate their relative merits in terms of productivity and the social welfare of workers.

Sample Learning Activities:

- ❖ Classify the characteristics of traditional, command, and market economic systems and describe how such systems operate in specific countries (e.g., Burkina Faso as a traditional economy; North Korea as a command economy; Canada as a market economy).
- ❖ Identify geographic problems in the transition period as a country shifts from one economic system to another (e.g., from a command economy to a market economy in the republics of the former Soviet Union).
- ❖ Analyze the Soviet Central Asia Virgin Land Scheme to develop market agriculture in the USSR.

## **Content Focus: Global economic interdependence** (i.e. regional specialization, trade, transnationalism, multinationals)

Geography for Life: pp. 206-07: S11.3.D

Broad Learning Objective: Identify and analyze the historical movement patterns of people and goods and their relationships to economic activity.

Sample Learning Activities:

- ❖ Analyze the distribution of world resources and explain likely trade routes for Canadian imports and exports (e.g., Canada's increased trade with the Pacific Rim nations).
- ❖ Prepare a map showing the origin of the components of a Canadian product (e.g., automobile, computer, steel).

**Content Focus: Patterns of global power and influence** (e.g., NATO, United Nations, European Union) Geography for Life: pp. 210-211: S13.1.A

Broad Learning Objective: Analyze how cooperation and conflict influence the development and control of social, political, and economic entities on Earth.

Sample Learning Activity:

- ❖ Explain how cooperation and/or conflict can lead to the allocation of political and economic control of Earth's land, peoples, and resources (e.g., the role of NATO, the UN, the EU).

**Content Focus: Cooperation and conflict in the division and control of Earth's surface**

Geography for Life: pp. 210-211: S13.1.A

Broad Learning Objective: Analyze how cooperation and conflict influence the development and control of social, political, and economic entities on Earth.

Sample Learning Activities:

- ❖ Analyze the causes of boundary conflicts and internal disputes between culture groups (e.g., the conflict between North Korea and South Korea; friction between the French and English in Canada; the civil war between the Hutus and Tutsis in Rwanda).
- ❖ Explain why boundaries of census districts and political ridings change in the Canada (e.g., the effects of legal requirements, population shifts, shifts in political power).
- ❖ Analyze the aboriginal land claims issues in Canada using a case study such as the White Rock housing land issue. Explore who controls these issues and how cooperation is needed to resolve them.

# ENVIRONMENT AND SOCIETY

## **Content Focus: Global effects of human modification of the physical environment**

Geography for Life: pp. 212-13: S14.2.B

Broad Learning Objective: Explain the global impacts of human changes in the physical environment

Sample Learning Activities:

- ❖ Explain the spatial consequences, deliberate and inadvertent, of human activities that have global implications (e.g., the dispersal of animal and plant species worldwide, increases in runoff and sediment, tropical soil degradation, habitat destruction, air pollution, alterations in the hydrologic cycle).
- ❖ Examine the characteristics of major global environmental changes and assess whether the changes are a result of human actions, natural causes, or a combination of both factors (e.g., increases in world temperatures attributable to major global environmental changes, results of the greenhouse effect attributable to human action, the link between changes in solar emissions and amounts of volcanic dust in the atmosphere attributable to natural causes).

## **Content Focus: Global effects on the human environment by changes in the physical environment**

Geography for Life: pp. 214-215: S15.1.A

Broad Learning Objective: Analyze examples of changes in the physical environment that have reduced the capacity of the environment to support human activity.

Sample Learning Activities:

- ❖ Describe and evaluate the carrying capacity of selected regions to predict the likely consequences of exceeding their environmental limits (e.g., the impact of the economic exploitation of Siberia's resources on a fragile sub-Arctic environment or the Hydro Electric Power creation in the James Bay area of Québec).
- ❖ Develop contemporary and historical case studies to serve as examples of the limited ability of physical systems to withstand human pressure or of situations in which the environment's quality and ability to support human populations has diminished because of excessive use (e.g., the drought-plagued Sahel, the depleted rain forest of central Africa, the burial of nuclear waste in Lac Du Bonnet, Manitoba).

## **Content Focus: Impacts of major natural hazards/disasters on humans**

Geography for Life: pp. 214-215: S15.3.C

Broad Learning Objective: Explain the ways in which individuals and societies hold varying perceptions of natural hazards in different environments and have different ways of reacting to them.

Sample Learning Activities:

- ❖ Conduct interviews to assess people's attitudes, perceptions, and responses toward natural hazards in the local community and explain patterns that may emerge (e.g., the effects of religious beliefs, socioeconomic status, previous experience, and other factors on perception and response toward hazards such as building on flood plains in Manitoba).
- ❖ Evaluate the effectiveness of human attempts to limit damage from natural hazards and explain how people who live in naturally hazardous regions adapt to their environments (e.g., the use of sea walls to protect coastal areas subject to severe storms; the use of earthquake-resistant construction techniques in different regions within the Ring of Fire, such as Vancouver, BC).

## **Content Focus: Impacts of technological hazards/disasters on the physical environment**

Geography for Life: pp. 212-213: S14.2.B

Broad Learning Objective: Explain the global impacts of human changes in the physical environment.

Sample Learning Activity:

- ❖ Describe the spatial consequences, deliberate and inadvertent, of human activities that have global implications (e.g., the dispersal of animal and plant species world-wide, such as the Zebra Mussels in the Great Lakes and the introduction of the Purple Loosestrife in marshland regions of Canada; increases in runoff and sediment; tropical soil degradation; habitat destruction; air pollution, such as the acid rain destruction in Sudbury, Ontario, and alterations in the hydrologic cycle).

## **Content Focus: World patterns of resource distribution and utilization**

Geography for Life: pp. 216-218: S16.3.C

Broad Learning Objective: Evaluate policy decisions regarding the use of resources in different regions of the world.

Sample Learning Activities:

- ❖ Explain and evaluate the geographic consequences of the development and use of various forms of energy (e.g., renewable, nonrenewable, and flow resources).
- ❖ Evaluate the short term and long term economic prospects of countries that rely on exporting nonrenewable resources (e.g., the long term impact on the economy of Nauru when its phosphate reserves are exhausted, the economic and social problems attendant to the overcutting of pine forests in Nova Scotia).

## **Content Focus: Use and sustainability of resources**

Geography for Life: pp. 216-218: S16.3.D

Broad Learning Objective: Identify and explain the ways in which resources can be reused and recycled.

Sample Learning Activities:

- ❖ Explain the changing relocation strategies of industries seeking access to recyclable material (e.g., paper factories, container and can companies, glass, plastic, tertiary plants, and bottle manufactures).
- ❖ Compare recycling laws in the provinces of Canada and other countries to explain people's attitudes towards resource management (e.g., attitudes on comprehensive versus haphazard, stringent versus permissive, fully enforced versus consistently neglected approaches to resource management).

## **Content Focus: Environmental issues** (e.g., global warming, loss of biodiversity, deforestation, ozone depletion, air pollution, water pollution, acid precipitation, disposal of solid waste)

Geography for Life: pp. 212-213: S14.2.B

Broad Learning Objective: Analyze and assess the global impacts of human changes in the physical environment.

Sample Learning Activities:

- ❖ Analyze and debate the positive and negative aspects of landscape changes in the students' local community and region that relate to people's changing attitudes toward the environment (e.g., pressure to replace farmlands with wetlands in floodplain areas; interest in preserving wilderness areas; support of the concept of historic preservation; and the re-evaluation of dam projects in Québec).
- ❖ Examine the characteristics of major global environmental changes and assess whether the changes are a result of human action, natural causes, or a combination of both factors (e.g., increases in world temperatures attributable to major global environmental change; results of greenhouse effect attributable to human action; the link between changes in solar emissions and amounts of volcanic dust in the atmosphere attributable to natural causes).



# USES OF GEOGRAPHY

## **Content Focus: Influence of geographical features on the evolution of significant historic events and movements**

Geography for Life: pp. 219-220: S17.3.C

Broad Learning Objective: Analyze the ways in which physical and human features have influenced the evolution of significant historic events and movements.

Sample Learning Activities:

- ❖ Examine the historical and geographical forces responsible for the industrial revolution in England in the late eighteenth and early nineteenth centuries (e.g., the availability of resources, capital, labor, markets, technology).
- ❖ Examine early exploration and settlement of Canada in the seventeenth and eighteenth centuries
- ❖ Evaluate the physical and human factors that have led to famines and large-scale refugee movements (e.g., the plight of the Irish in the wake of the potato famine in 1845 - 1850, the cyclical famines in China, the droughts and famines in the Sahel in the 1970s and 1980s)

## **Content Focus: Local, regional, and world policies and problems with spatial dimensions**

Geography for Life: pp. 221-222: S18.2.B

Broad Learning Objective: Develop plans to solve local and regional problems that have spatial dimensions.

Sample Learning Activity:

- ❖ Use a series of maps, a geographic information system (GIS) or data collected from field observation to obtain information on soil, hydrology and drainage, sources of water, and other factors. Then use the information to choose the best site for the sanitary landfill in an urban region.
- ❖ Use a series of maps or a geographic information system (GIS) to locate the newest Tim Horton's (or Starbucks Coffee) or a new local sports or recreation complex in your area.

## APPENDIX A

# GEOGRAPHIC Skills and Perspectives<sup>3</sup>

## GEOGRAPHIC SKILLS

Geographic skills provide the necessary tools and techniques for us to think geographically. They are central to geography's distinctive approach to understanding physical and human patterns and processes on Earth. We use geographic skills when we make decisions important to our well-being—where to buy or rent a home; where to get a job; how to get to work or to a friend's house; where to shop, vacation, or go to school. All of these decisions involve the ability to acquire, arrange, and use geographic information. Daily decisions and community activities are linked to thinking systematically about environmental and societal issues. Community decisions relating to problems of air, water, and land pollution or locational issues, such as where to place industries, schools, and residential areas, also require the skillful use of geographic information. Business and government decisions, from the best site for a supermarket or a regional airport to issues of resource use, or international trade, involve the analysis of geographic data.

Geographic skills help us to make reasoned political decisions. Whether the issues involve the evaluation of foreign affairs and international economic policy or local zoning and land use, the skills enable us to collect and analyze information, come to an informed conclusion, and make reasoned decisions on a course of action. Geographic skills also aid in the development and presentation of effective, persuasive arguments for and against matters of public policy.

## THE RATIONALE FOR GEOGRAPHIC SKILLS

The geographic skills that a geographically informed person should have consist of five sets adapted from the *Guidelines for Geographic Education: Elementary and Secondary Schools*, prepared by the Joint Committee on Geographic Education and published in 1984 by the Association of American Geographers and the National Council for Geographic Education:

1. ASKING GEOGRAPHIC QUESTIONS
2. ACQUIRING GEOGRAPHIC INFORMATION
3. ORGANIZING GEOGRAPHIC INFORMATION
4. ANALYZING GEOGRAPHIC INFORMATION
5. ANSWERING GEOGRAPHIC QUESTIONS

Following is a brief discussion of the principles underlying the five skill sets, followed by the presentation of skills.

### 1. ASKING GEOGRAPHIC QUESTIONS

Successful geographic inquiry involves the ability and willingness to ask, speculate on, and answer questions about why things are where they are and how they got there. Students need to be able to pose questions about their surrounding: Where is something located? Why is it there? With what is it associated? What are the consequences of its location and associations? What is this place like?

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<sup>3</sup> *Geography for Life*, National Geographic Research and Exploration; (Washington, D.C., The National Geographic Society, 1994), Chapter 3, pages 41-45, 57-58.

Students should be asked to speculate about possible answers to questions because speculation leads to the development of hypotheses that link the asking and answering stages of the process. Hypotheses guide the search for information.

Geography is distinguished by the kinds of questions it asks—the “where” and “why there” of a problem. It is important that students develop and practice the skills of asking such questions for themselves. The task can be approached by giving students practice in distinguishing geographic from nongeographic questions and by presenting students with issues and asking them to develop geographic questions. At higher grade levels students can identify geographic problems and ways in which an application of geography can help solve problems or resolve issues.

## **2. ACQUIRING GEOGRAPHIC INFORMATION**

Geographic information is information about locations, the physical and human characteristics of those locations, and the geographic activities and conditions of the people who live in those places. To answer geographic questions, students should start by gathering information from a variety of sources in a variety of ways. They should read and interpret all kinds of maps. They should compile and use primary and secondary information to prepare quantitative and qualitative descriptions. They should collect data from interviews, fieldwork, reference material, and library research.

The skills involved in acquiring geographic information include locating and collecting data, observing and systematically recording information, reading and interpreting maps and other graphic representations of spaces and places, interviewing, and using statistical methods.

Primary sources of information, especially the result of fieldwork performed by the students, are important in geographic inquiry. Fieldwork involves students conducting research in the community by distributing questionnaires, taking photographs, recording observations, interviewing citizens, and collecting samples. Fieldwork helps arouse the students' curiosity and makes the study of geography more enjoyable and relevant. It fosters active learning by enabling students to observe, ask questions, identify problems, and hone their perceptions of physical features and human activities with the world in which they live.

Secondary sources of information include texts, maps, statistics, photographs, multimedia, computer databases, newspapers, telephone directories, and government publications.

Tertiary sources such as encyclopedias report information compiled from secondary sources and are important in some research situations.

## **3. ORGANIZING GEOGRAPHIC INFORMATION**

Once collected, the geographic information should be organized and displayed in ways that help analysis and interpretation. Data should be arranged systematically. Different types of data should be separated and classified in visual, graphic forms: photographs, aerial photos, graphs, cross sections, climographs, diagrams, tables, cartograms, and maps. Written information from documents or interviews should be organized into pertinent quotes or tabular form.

There are many ways to organize geographic information. Maps play a central role in geographic inquiry, but there are other ways to translate data into visual form, such as by using graphs of all kinds, tables, spreadsheets, and time lines. Such visuals are especially useful when accompanied by clear oral or written summaries. Creativity and skill are needed to arrange geographic information effectively. Decisions about design, color, graphics, scale, and clarity are important in developing the kinds of maps, graphs, and charts that best reflect the data.

Geography has been called “the art of the mappable”. Making maps should be a common activity for all students; they should read (decode) maps to collect information and analyze geographic patterns and make (encode) maps to organize information. Making maps can mean using sketch maps to make a point in an essay or record field observations. It can mean using symbols to map data on the location of world resources or producing a county-

level map of income in a state. It can even mean mapping the distribution of fire-ant mounds in a field or trash on a school playground. For students, making maps should become as common, natural, and easy as writing a paragraph. They should be skilled in interpreting and creating map symbols, finding locations on maps using a variety of reference systems, orienting maps and finding directions, using scales to determine distance, and thinking critically about information on maps.

#### **4. ANALYZING GEOGRAPHIC INFORMATION**

Analyzing geographic information involves seeking patterns, relationships, and connections. As students analyze and interpret information, meaningful patterns or processes emerge. Students can then synthesize their observations into a coherent explanation. Students should note associations and similarities between areas, recognize patterns, and draw inferences from maps, graphs, diagrams, tables, and other sources. Using simple statistics students can identify trends, relationships, and sequences.

Geographic analysis involves a variety of activities. It is sometimes difficult to separate the processes involved in organizing geographic information from the procedures used in analyzing it. The two processes go on simultaneously in many cases. But in other instances, analysis follows the manipulation of raw data into an easily understood and usable form. Students should scrutinize maps to discover and compare spatial patterns and relationships; study tables and graphs to determine trends and relationships between and among items; probe data through statistical methods to identify trends, sequences, correlations, and relationships; examine texts and documents to interpret, explain, and synthesize characteristics. Together these analytical processes lead to answers to the questions that first prompted an inquiry and to development of geographic models and generalizations. There are the analytical skills that all students need to develop.

#### **5. ANSWERING GEOGRAPHIC QUESTIONS**

Successful geographic inquiry culminates in the development of generalizations and conclusions based on the data collected, organized, and analyzed. Skills associated with answering geographic questions include the ability to make inferences based on information organized in graphic form (maps, tables, graphs) and in oral and written narratives. These skills involve the ability to distinguish generalizations that apply at the global level (issues of scale are important in developing answers to geographic questions).

Generalizations are the culmination of the process of inquiry, and they help to codify understanding. Developing generalizations requires that students use the information they have collected, processed, and analyzed to make general statements about geography. At other times, however, students use the evidence they have acquired to make decisions, solve problems, or form judgements about a question, issue, or problem.

Geographic generalizations can be made using inductive reasoning or deductive reasoning. Inductive reasoning requires students to synthesize geographic information to answer questions and reach conclusions. Deductive reasoning requires students to identify relevant questions, collect and assess evidence, and decide whether the generalizations are appropriate by testing them against the real world. Students should have experience in both approaches to learning.

Students should also be able to communicate clearly and effectively, especially as they learn to answer geographic questions. It is a skill linked closely to good citizenship. Students can develop a sense of civic responsibility by disseminating the answers they have discovered in geographic inquiry. They can display geographic information in many engaging and effective ways—for example, by using multimedia, such as combinations of pictures, maps, graphs, and narratives, to present a story or illuminate a generalization. Geographic information can also be presented through the use of poems, collages, plays, journals, and essays. Every medium chosen to present geographic information to answer a question or address an issue or problem should stimulate inquiry and communicate clearly. Choosing the best means of presenting answers to geographic questions is an important skill.

Students should also understand that there are alternative ways to reach generalizations and conclusions. There are many types of knowledge, and many levels of reality and meaning. Teachers should encourage students to

develop multiple points of view and to seek multiple outcomes to problems. This process should include collecting many kinds of data, including personal, subjective information, from a variety of sources.

The fifth skill set represents the last step in the process of geographic inquiry. But it is not really the end, because the process usually begins again with new questions suggested by the conclusions and generalizations that have been developed. These questions, often posed as hypotheses to be tested, provide a way to review generalizations. Each question answered, decision reached, or problem solved leads to new issues and new problems. Geographic learning is a continuous process that is both empowering and fascinating.

## **DEVELOPING GEOGRAPHIC SKILLS**

It is essential that students develop the skills that will enable them to observe patterns, associations, and spatial order. Many of the skills that students are expected to learn involve the use of tools and technologies that are part of the process of geographic inquiry. Maps are essential tools of geography because they assist in the visualization of space.

Other tools and technologies, such as satellite-produced images, graphs, sketches, diagrams, and photographs are also integral parts of geographic analysis. The rate of growth of an urban area, for example, can be observed by comparing old and new photographs. Large-scale land-use changes can be made clear by comparing images taken over a period of years.

A new and important tool in geographic analysis is the spatial database, or geographic information system (GIS). Geographic information systems make the process of presenting and analyzing geographic information easier, so they accelerate geographic inquiry. Spatial databases also can be developed in the classroom using paper and pencil.

Many of the capabilities that students need to develop geographic skills are termed critical thinking skills. Such skills are not unique to geography and involve a number of generic thinking processes, such as knowing, inferring, analyzing, judging, hypothesizing, generalizing, predicting, and decision-making. These have applications to all levels of geographic inquiry and constitute the bases on which students can build competencies in applying geographic skills to geographic inquiry.

Geographic skills develop over the entire course of the students' school years, and for each of the three successive grade levels discussed. Teachers and other curriculum developers will need to recognize that the students' mastery of geographic skills must be sequenced effectively so that the students retain and build on their understanding.

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***See chart "The Five Sets of Geographic Skills by Grade Level" at the end of Appendix A***

# **GEOGRAPHIC PERSPECTIVES**

A perspective is one point of view among many competing ways of interpreting the meanings of experiences, events, places, persons, cultures, and physical environments. Having a perspective means looking at our world through a lens shaped by personal experience, selective information, and subjective evaluation. A perspective provides a frame of reference for asking and answering questions, identifying and solving problems, and evaluating the consequences of alternative actions. It is essential to be aware that many perspectives exist and that learning to understand the world from many points of view enhances our knowledge and skills. It is also essential to realize that our perspectives incorporate all life experiences and draw upon knowledge from many fields of inquiry. Therefore, people cannot be neatly boxed into specific perspective types regardless of their cultural experiences, ethnic backgrounds, age, gender, or any other characteristic. Geographically informed people know how to contemplate, understand, and apply two specific geographic perspectives, along with complementary disciplinary and personal perspectives.

The two specific geographic perspectives are the spatial perspective and the ecological perspective. Geographic perspectives bring societies and nature under the lens of geography for interpretation and explanation.

Geographic perspectives encompass understanding spatial patterns and processes on Earth and comprehending that Earth is composed of living and nonliving elements interacting in complex webs of relationships within nature and between nature and societies. A fully developed set of geographic perspectives, therefore, requires the use of both spatial and ecological points of view.

Knowledge is one fabric woven from many distinctive fields of learning and is organized by different intellectual frameworks. Although each field of study represents distinctive areas of inquiry, specialization, and perspectives, diverse sets of questions are needed to reveal the complexities of nature and societies. Consequently, although spatial and ecological perspectives are hallmarks of the geographic way of looking at the world, additional perspectives are required for us to become fully informed.

## **THE SPATIAL PERSPECTIVE**

As history is concerned with the temporal dimension of human experience (time and chronology), geography is concerned with the spatial dimension of human experience (space and place). The space of Earth's surface is the fundamental characteristic underpinning geography. The essential issue of "whereness" - embodied in specific questions such as, Where is it? Why is it there? - helps humans to contemplate the context of spatial relationships in which the human story is played out.

Understanding spatial patterns and processes is essential to appreciating how people live on Earth. People who approach knowing and doing with a habit of inquiring about whereness possess a spatial perspective.

## **THE ECOLOGICAL PERSPECTIVE**

Earth is composed of living and nonliving elements interacting in complex webs of ecological relationships which occur at multiple levels. Humans are part of the interacting and interdependent relationships in ecosystems and are one among many species that constitute the living part of Earth. Human actions modify physical environments and the viability of ecosystems at local to global scales. The survival of humans and other species requires a viable global ecosystem.

Understanding Earth as a complex set of interacting living and nonliving elements is fundamental to knowing that human societies depend on diverse small and large ecosystems for food, water, and all other resources. People who regularly inquire about connections and relationships among life forms, ecosystems, and human societies possess an ecological perspective.

## **COMPLEMENTING THE TWO GEOGRAPHIC PERSPECTIVES**

Many perspectives supplement the two geographic perspectives and, when used appropriately, they can expand our understanding of spatial patterns and human-environmental interactions. The geographic perspectives can be integrated with other disciplinary perspectives and with our own points of view to enrich and enlarge the understanding of people, places, and environments. Two other perspectives are of particular value to students of geography: the historical perspective and the economic perspective

## **THE HISTORICAL PERSPECTIVE**

All human events and activities have historic and geographic aspects. Central to historical inquiry are questions concerning chronology, the sequencing of events, relationships within and among societies over time, changes in cultures in various eras, and the changing relationships between civilizations and physical environments. A historical perspective enriches the geographic perspective by adding the essential questions of When? Why then? and Why is the event significant? These questions complement the study of whereness and consequently promote a deepened understanding of past and contemporary events, how and why places and regions form and change, and variations in human use of environments in different cultures and eras.

Understanding temporal patterns is a vital dimension of comprehending human experiences on Earth. People who ask questions about when events occurred and how events are related to each other over time use a historical perspective.

## **THE ECONOMIC PERSPECTIVE**

Economics focuses on how people produce and exchange goods and services to fulfill such need as food, shelter, transportation, and recreation. Earning a living, developing and trading resources, and inventing, producing, and distributing products and services are central to economics. Previously isolated economies are incorporated into the global economy through difficult transitions from subsistence to commercial activities. Economic transformations promote an increasing interdependence among all societies and cultures on Earth. Technological changes in transportation and communications accelerate and expand economic exchange between the peoples of the world. Local economies may be drastically altered by decisions made in distant places.

Understanding the integration of local, regional, and national economies with the global economy is critical to knowing how people interact. People who ask how diverse peoples earn a living and how peoples are connected through trade in goods and services apply an economic perspective.

# THE FIVE SETS OF GEOGRAPHIC SKILLS BY GRADE LEVEL

The geographic skills that all students need to develop are organized by benchmark year (by the end of the fifth, eighth and twelfth grades).

	<b>K-5 (by the end of grade 5)</b>	<b>6-8 (by the end of grade 8)</b>	<b>9-12 (by the end of grade 12)</b>
<b>1</b> <b>Asking geographic questions</b>	<ol style="list-style-type: none"> <li>1. Ask geographic questions – Where is it located? What is significant about its location? How is its location related to the locations of other people, places and environments?</li> <li>2. Distinguish between geographic and non-geographic questions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify geographic issues, define geographic problems and pose geographic questions.</li> <li>2. Plan how to answer geographic questions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Plan and organize a geographic research project (e.g. specify a problem, pose a research question or hypothesis and identify data sources)</li> </ol>
<b>2</b> <b>Acquiring geographic information</b>	<ol style="list-style-type: none"> <li>1. Locate, gather and process information from a variety of primary and secondary sources including maps.</li> <li>2. Make and record observations about the physical and human characteristics of places.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use a variety of research skills to locate and collect geographic data.</li> <li>2. Use maps to collect and/or compile geographic information.</li> <li>3. Systematically observe the physical and human characteristics of places on the basis of fieldwork.</li> </ol>	<ol style="list-style-type: none"> <li>1. Systematically locate and gather geographic information from a variety of primary and secondary sources.</li> <li>2. Systematically assess the value and use of geographic information.</li> </ol>
<b>3</b> <b>Organizing geographic information</b>	<ol style="list-style-type: none"> <li>1. Prepare maps to display geographic information.</li> <li>2. Construct graphs, tables and diagrams to display geographic information.</li> </ol>	<ol style="list-style-type: none"> <li>1. Prepare various forms of maps as a means of organizing geographic information.</li> <li>2. Prepare various forms of graphs to organize and display geographic information.</li> <li>3. Prepare various forms of diagrams, tables and charts to organize and display geographic information.</li> <li>4. Integrate various types of materials to organize geographic information.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select and design appropriate forms of maps to organize geographic information.</li> <li>2. Select and design appropriate forms of graphs, diagrams, tables and charts to organize geographic information.</li> <li>3. Use a variety of media to develop and organize integrated summaries of geographic information.</li> </ol>
<b>4</b> <b>Analyzing geographic information</b>	<ol style="list-style-type: none"> <li>1. Use maps to observe and interpret geographic relationships.</li> <li>2. Use tables and graphs to observe and interpret geographic trends and relationships.</li> <li>3. Use texts, photographs and documents to observe and interpret geographic trends and relationships.</li> <li>4. Use simple mathematics to analyze geographic data.</li> </ol>	<ol style="list-style-type: none"> <li>1. Interpret information obtained from maps, aerial photographs, satellite-produced images and geographic information systems.</li> <li>2. Use statistics and other quantitative techniques to evaluate geographic information.</li> <li>3. Interpret and synthesize information obtained from a variety of sources – graphs, charts, tables, diagrams, texts, photographs, documents and interviews.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use quantitative methods of analysis to interpret geographic information.</li> <li>2. Make inferences and draw conclusions from maps and other geographic representations.</li> <li>3. Use the processes of analysis, synthesis, evaluation and explanation to interpret geographic information from a variety of sources.</li> </ol>
<b>5</b> <b>Answering geographic questions</b>	<ol style="list-style-type: none"> <li>1. Present geographic information in the form of both oral and written reports accompanied by maps and graphics.</li> <li>2. Use methods of geographic inquiry to acquire geographic information, draw conclusions and make generalizations.</li> <li>3. Apply generalizations to solve geographic problems and make reasoned decisions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop and present combinations of geographic information to answer geographic questions.</li> <li>2. Make generalizations and assess their validity.</li> </ol>	<ol style="list-style-type: none"> <li>1. Formulate valid generalizations from the results of various kinds of geographic inquiry.</li> <li>2. Evaluate the answers to geographic questions.</li> <li>3. Apply geographic models, generalizations and theories to the analysis, interpretation and presentation of geographic information.</li> </ol>

## APPENDIX B

### Time in the Classroom<sup>4</sup>

The National (U.S.) Education Goals require that students demonstrate “competency over challenging subject matter” and that teachers “will have continuing opportunities to acquire additional knowledge and skills needed to teach challenging subject matter”. Meeting both of these challenges requires time. Members of the community and educators must rethink the time allocated to geography. There must be adequate space for geography in the curriculum for a student to become geographically informed and for teachers to be able to foster student learning.

Time must be considered in both quantitative and qualitative terms. In quantitative terms more quality time is often required. At present geography plays only a minor role in the curriculum. In qualitative terms different kinds of time are required. Geography depends upon fieldwork, extended problem solving, laboratory work, and real-life projects. We must reconceptualize and reorganize the school day.

This table is a statement of the minimum requirements for geography in the Canadian classroom. The five-step process relates time requirements to educational purposes, setting both within a context of developing competency in geography.

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<sup>4</sup>*Geography for Life*, National Geographic Research and Exploration; (Washington, D.C., The National Geographic Society, 1994), Appendix D.

# GEOGRAPHY IN THE CLASSROOM

<b>Requirements</b>					
<b>Step</b>	<b>Grades</b>	<b>Infused</b>	<b>Stand-Alone</b>	<b>Purpose</b>	<b>Mechanisms</b>
1	K-3	access to and use of geography - based materials throughout the curriculum	none	develop working familiarity with basic concepts, approaches, and tools of geography	incorporated throughout the curriculum
2	4-5		series of six two-week units in grade 4 and, eight, two-week units in grade 5	build a basic understanding of geographic approaches	set within the traditional geography of the province and Canada
3	6-8		a year-long course in geography	extended understanding of geographic approaches	focus on topics from local to global
4	9-11		a year-long course in geography	deepen understanding of geographic approaches	world geography
5	12		an elective, semester-long course in geography	capstone experience for students wishing to enhance their understanding of geography	an advanced topical or regional geography course

# Selected Resources

## Web Site Addresses

An extensive list of resources relating to these Geography Standards can be found at:

<http://home.iSTAR.ca/~whamilton/standards.htm>

## Paperback Publications

*Geography for Life: National Geographic Standards 1994.* Washington, D.C.: National Geographic Society, 1994.

*A Path Toward World Literacy: A Standards-Based Guide to K-12 Geography,* Washington, D.C.: National Geographic Society, 2000.

*Path Toward World Literacy: A Scope and Sequence in Geographic Education K-12,* Washington, D.C.: National Geographic Society, 2000

# Glossary

**absolute location** - the location of a point on Earth's surface which can be expressed by grid reference (e.g., latitude and longitude).

**acid precipitation** - precipitation with a pH value of 5.6 or lower (7 is neutral, less than 7 increasing in acidity, and more than 7 increasing in alkalinity). Precipitation becomes excessively acidic when oxides of sulfur and nitrogen released by combustion of fossil fuels combine with moisture in the atmosphere to form acids.

**air pollution** - the presence in the air of human-caused, or human-made, contaminants which may adversely affect property or the lives of plants, animals, or humans. Common air pollutants include: carbon dioxide, carbon monoxide, lead, nitrogen oxide, ozone, and sulfur dioxide.

**area** - one of the basic terms of reference in spatial analysis; the other two are point and line. Area may be defined as the extent of a surface or expanse of land, measured in square units. Areas include neighbourhoods, cities, countries, drainage basins, and climate and landform regions.

**atmosphere** - the envelope of gases, aerosols, and other materials that surrounds Earth to a depth of around 12 miles and is held close by gravity. The gases are dominated by nitrogen (78.1 percent), oxygen (20.9 percent), argon (0.93 percent), and carbon dioxide (0.03 percent) and include much smaller percentages of helium, methane, and hydrogen. The atmosphere commonly is divided into troposphere, stratosphere, and ionosphere.

**biodiversity** - the varied range of flora and fauna. The maintenance of a varied gene pool is of critical importance for human survival. A diverse ecosystem has the greatest chance for survival, even with the loss of a single species.

**biome** - very large ecosystem made up of specific plant and animal communities interacting with the physical environment (climate and soil). They are usually identified with the climate and climax vegetation of large areas of Earth's surface (e.g., the Equatorial and Tropical Rain Forest Biome).

**biosphere** - the realm of Earth which includes all plant and animal life forms.

**climate** - long-term trends in atmospheric conditions.

**commercial agriculture** - a form of agriculture in which crops are cultivated for sale rather than for personal consumption or subsistence.

**continental drift** - see plate tectonics.

**convective precipitation** - precipitation produced by moisture condensed from warm, humid, rising air. It results from the heating of underlying surfaces. An extreme form of convective precipitation is a violent thunderstorm.

**cultural diffusion** - the spread of ideas, technology, religion, language, and other cultural practices over time and across space.

**cultural traits** - aspects of a people's way of life, including language, religion, dress, music, and food.

**cyclonic precipitation** - caused by a low-pressure circulation system whereby surface-level air is drawn from the periphery to the center and then moves upward. This upward motion results in cooling and condensation. Cyclonic precipitation systems are common in subtropical and mid-latitude regions where they are initiated by frontal processes.

**deforestation** - the destruction and removal of forest and its undergrowth by natural or human forces.

**demographic transition model** - a model showing a country's shift from conditions of high birth and death rates (low population growth) to low birth and death rates (low population growth) separated by a transitional period in which death rates fall faster than birth rates, resulting in high levels of population growth.

**Earth-Sun relationships** - position and movement of the Earth and Sun with respect to one another: day and night, seasons, and long-term environmental change.

**El Niño (El Niño Southern Oscillation - ENSO)** - an upwelling, warm ocean current off the coast of Ecuador, so named after the Christ child (in Spanish) because it develops soon after Christmas. Its timing and size affect world weather patterns and environmental processes.

**ecosystem (ecological system)** - a community of plants and animals linked to one another and to the physical environment in which they live.

**equator** - an imaginary line around the world equidistant between the North and South Poles. It has a length of 40,076 kilometers or about 25,000 miles.

**extreme natural events** - high magnitude, low frequency events in nature such as a 100-year flood or drought, a level-5 hurricane, and a volcanic eruption.

**formal (uniform) region** - a region defined by the uniformity or homogeneity of certain characteristics, such as precipitation, landforms, language, religion, or type of economic activity.

**functional region** - a region linked by functional linkages or spatial interaction. Functional regions that are defined by their ties to a central node are classified as nodal regions (e.g., banking linkages between large nodal cities and smaller cities and towns).

**geographical information systems (GIS)** - systems of geographically referenced information. GIS are used to store, analyze, manipulate, and display a wide range of information about places in a highly flexible format.

**global positioning systems (GPS)** - collection of geostationary satellites and ground stations used to locate points on the surface of the Earth.

**global warming** - increased mean world temperatures. Such change may be natural or caused by human activities such as the burning of fossil fuels and land clearing by fire.

**grid** - a pattern of lines on a chart or map, such as those representing latitude and longitude used to determine absolute location.

**hazardous waste** - toxic or poisonous byproducts of human activities including radioactive substances, dangerous chemicals, and contaminated biological materials.

**hierarchy** - any ordering of phenomena with grades or classes rated in sequence, such as a county is part of a province and a province is part of a country or a small drainage basin is nested into an intermediate-sized one which, in turn, is nested into a larger one.

**human settlement** - how people organize their residences in space: whether they live in isolated buildings cut off from one another, in small villages, cities and suburbs, or megacities.

**hydrogeology** - study of water below the surface of the Earth (ground water).

**hydrologic cycle** - the continuous circulation of water from the oceans, through the air, to the land, and back to the sea. Water evaporates from oceans, lakes, rivers, and land surfaces and transpires from vegetation. It condenses into clouds in the atmosphere and then returns to land through precipitation. Land-based precipitation eventually seeps into the soil or flows out to sea, thus completing the cycle.

**hydrosphere** - the water realm of Earth, which includes water contained in the oceans, lakes, rivers, ground, glaciers, and water vapor in the atmosphere.

**interstate commerce** - flow of goods and services across state boundaries.

**intrastate commerce** - flow of goods and services within state boundaries.

**latitude** - imaginary circles drawn around the Earth parallel to the Equator. The parallels are numbered according to the angle formed between a line from the line of latitude to the center of the Earth. The Equator is 0 degrees; the North Pole is 90 degrees North; and the South Pole is 90 degrees South.

**line** - one of the basic terms of reference in spatial analysis; the other two are point and area. A line connects two points in space and can take the form of a transportation route, river, or migration flow.

**lithosphere** - the uppermost portion of the solid Earth, including soil, land, and geological formations.

**location/allocation problems** - geographical questions that involve determining the most efficient distribution of services or transportation flows, given a set of constraints. A typical problem might involve determining the most efficient system of moving coal in China, given no more than 50 percent can move by rail.

**longitude** - the position of a point on Earth's surface expressed as its angular distance, east or west, from the prime meridian to 180 degrees.

**map projection** - a mathematical formula by which the lines of a global grid and the shapes of land and water bodies are transferred from the curved surface of the Earth to the flat surface of a piece of paper or computer screen. All projections involve some type of distortion of shape, size, distance, or direction.

**megacities** - rapidly growing cities, typically defined as having populations in excess of 5 million. The vast majority of the world's megacities are in developing countries.

**megalopolis** - the coalescence of two or more large metropolitan areas into a continuous or almost continuous built-up urban complex, sometimes referred to as conurbation. Megalopolis also is used to refer to the continuous, built-up eastern seaboard of the United States stretching from Boston to Washington, D.C.

**mental map** - the map-like image of the world, country, city, or neighborhood a person carries in mind. It is subjective and carries knowledge of actual locations and spatial relations and is coloured by personal perceptions and attitudes regarding the place.

**multinational (multinational corporation)** - a firm which owns or controls production facilities in more than one country through direct foreign investment. Multinationals are made possible through improved international transportation, communication, and mobility of capital.

**natural hazard** - an extreme event in the physical environment that is destructive to human life and property. Natural hazards include floods, hurricanes, tornadoes, droughts, and heat waves.

**non-renewable resource** - a natural resource that is not replenished or replaced by natural processes or is used at a rate that exceeds its replacement rate (e.g., petroleum, minerals).

**orographic precipitation** - forms when moisture-laden air masses are forced to rise over high ground. The air is cooled, water vapor condenses, and precipitation occurs.

**ozone layer** - a layer in the stratosphere at an altitude of 12 to 21 miles that has a high concentration of ozone and protects the lower atmosphere and Earth's surface by absorbing much of the ultraviolet radiation that reaches Earth from the sun.

**perceptual region** - a region, such as the North or the Prairies, that is perceived to exist by its inhabitants or by the general population.

**plate tectonics** - the theory that Earth's surface is composed of rigid slabs or plates. The divergence, convergence, and slipping side-by-side of the different plates is responsible for present-day configurations of continents, ocean basins, and major mountain ranges and valley systems.

**point** - one of the basic terms of reference in spatial analysis; the other two are area and line. A point has a discrete location on Earth's grid and takes the form of an individual's unique address, a hospital, a weather station, or a gauging station.

**population density** - the number of individuals living in an area divided by the size of the area they occupy (e.g., 2,000 people divided by ten square miles = 200 people per square mile).

**population distribution** - the pattern of population in an area, whether it is predominantly urban or rural, concentrated in coastal or interior regions, clustered in one large city or distributed across large and small ones.

**population growth rate** - calculated by this formula: (population in time 2 – population in time 1) / (population in time 1). The population growth of a place is determined by the number of births added to a population, the number of deaths subtracted from a population, and the number of in-migrants to minus the number of out-migrants from that place.

**population age-sex structure** - graphical representation of the age and sex structure of a population with age on the vertical axis and percent of the population on the horizontal axis. Age-sex structures with large bases represent very young populations with rapid rates of population growth. Older, slower-growing populations have beehive-shaped age-sex structures.

**primary economic activities**- activities that make natural resources available for further processing (e.g., agriculture, ranching, forestry, fishing, extraction of minerals and ores).

**quaternary economic activities**- highly specialized, information-based services such as computer processing, corporate decision-making, and international banking services.

**rain shadow** - areas on leeward sides of mountain ranges characterized by much lower precipitation and humidity than the windward (rainy) side.

**relative location** - the location of a place or region in relation to other places or regions (e.g., northwest or downstream and nearness to a subway stop)

**remote sensing** - gathering and recording information about Earth's surface by methods which do not involve actual contact with the surface. Remote sensing techniques include photography, infrared imagery, and radar from aircraft, satellites, and spacecraft.

**renewable resource** - a resource that can be regenerated if used carefully (e.g., water, fish, timber).

**resource** - element of the natural environment that is of use to humans.

**revolution** - a radical, abrupt, sudden change in political organization resulting in a change in leadership from one ruler or type of government to another.

**rotation** - spin of the Earth on its axis. The Earth makes one complete rotation in a day.

**satellite image** - an image produced by a variety of sensors, such as radar, microwave detectors, and scanners, which measure and record electromagnetic radiation. The collected data are turned into digital form from transmission to ground receiving stations. The data can be reconverted into imagery in a form resembling a photograph.

**scale** - the relationship or ratio between a linear measurement on a map and the corresponding distance on Earth's surface. For example, the scale 1:1,000,000 means one inch on the map corresponds to 1,000,000 inches on Earth's surface. The idea of scale can also refer to the size of areas or regions being studied. A small-scale study "zooms in" on a small area, and a large-scale study "zooms out" on a large one.

**secondary economic activities**- the conversion of raw materials into finished industrial products (manufacturing).

**Southern Oscillation (also known as the El Niño Southern Oscillation)** - see El Niño.

**spatial** - adjective pertaining to the location and arrangement of human activities and natural processes on Earth's surface.

**spatial graphics** - representations of Earth's surface including maps, satellite images, and aerial photographs.

**subsistence agriculture** - a form of agriculture in which almost all of the produce goes to feed and support the household or local community. Little or none is offered for sale.

**sustainable resource** - a resource which is managed for long-term use such that it may be regarded as renewable. For instance, forestry may be managed as a slow growing but renewable resource of fuel and timber.

**symbols**- elements of the cultural landscape that have meaning for people, including flags, monuments, signs, fences and walls, and graffiti.

**technological hazards** - disastrous events attributed to a failure of technology or a technological product (e.g., radioactive materials released from a nuclear power plant explosion or soil contamination from a chemical spill).

**tertiary economic activities** - the provision of services in support of raw material extraction and manufacturing. Services range from household cleaning and car repair to hospitals, banking, and education.

**time zone** - the division of Earth into 24 zones for the purpose of apportioning the 24-hour day. Each zone contains approximately 15 degrees of longitude, and the time at the center of the zone represents the entire division.

**toxic waste** - discarded chemical substances that can cause serious illness or death.

**transnational (transnational corporation)** - a corporation that conducts business across international borders. Approximately one-fourth of the world's manufacturing is under the control of transnational corporations.

**water pollution** - concentration in water of chemical or biological materials that are hazardous to humans and other organisms. Sources of water pollution are heavy metals, salts, herbicides and pesticides, sediments, and human and animal wastes.

**watershed** - the drainage area of a river and its tributaries.

**weather** - short-term trends in atmospheric conditions.