Chapter 1: Exploring Geography

Section 1: The Study of Geography

Section 2: Changes Within the Earth

Section 3: Changes on the Earth's Surface
The Study of Geography

• How do geographers use tools to understand the world?
• What are the five themes of geography?
• How do geographers identify location, place, and region?
• Why do geographers study movement and human-environment interaction?
### Geographic Tools

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<th>Concept</th>
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<td>Geographic Tools</td>
<td>Instruments used to collect, organize, store, or display geographic information</td>
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<td>Physical Characteristics</td>
<td>Features of the Earth's surface, such as landforms, water systems, climate patterns, and plant and animal life</td>
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<td>Physical Processes</td>
<td>Actions of nature that change the physical environment</td>
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<td>Climates</td>
<td>Regional long-term trends in weather and atmospheric conditions</td>
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<td>Ecosystems</td>
<td>Networks of plants and animals interacting with the environment</td>
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<td>Patterns of Settlement</td>
<td>Distribution of populations among urban and rural communities</td>
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<td>Urbanization</td>
<td>Increase in the percentage of people living in cities</td>
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<td>Migration</td>
<td>Movement of people, often influenced by push-and-pull factors</td>
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<td>Population Growth</td>
<td>Increase in the number of people in a specific area</td>
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<td>Cultures</td>
<td>Learned behavior of people, including their belief systems, languages, governments, and material goods</td>
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<td>Science and Technology</td>
<td>Discoveries and inventions that help people to change or adapt to their environments</td>
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<td>Government and Citizenship</td>
<td>How different viewpoints influence political decisions, divisions, and policies connected to geographic issues</td>
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<td>Cooperation and Conflict</td>
<td>Methods used by countries and organizations to pursue goals, such as maintaining or expanding control over territory</td>
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<td>Economic Systems</td>
<td>Ways in which a society satisfies basic needs through the production and distribution of goods and services</td>
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<td>Economic Activities</td>
<td>Use of natural resources, production of goods, provision of services, and distribution of information</td>
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<td>Global Trade Patterns</td>
<td>International networks for exchanging goods and services</td>
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<td>Natural Resources</td>
<td>Any part of the natural environment that people need and value</td>
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<td>Natural Hazards</td>
<td>Natural events in the physical environment that are destructive, such as volcanoes and hurricanes</td>
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<td>Environmental Change</td>
<td>Natural or human alterations to the environment</td>
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<td>Understanding the Past</td>
<td>Analysis of how geography has affected historic events and how places, environments, and cultures have changed over time</td>
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<td>Planning for the Future</td>
<td>Use of geographic knowledge and skills to analyze problems and make decisions that affect the future</td>
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</table>
• **Geography** means “writing about” or “describing” the earth.

• Geographers use technological tools such as sonar, satellites, and the global positioning system (GPS) to study locations on the earth’s surface.

• Growing in importance are graphic information systems (GIS), which use computer technology to analyze and display data about the earth’s surface to solve geographic problems.

• Geographic concepts help organize the way people think about geography.
Five questions can help organize information about places:

- What is the location of a place?
- What is the character of a place?
- How are places similar to and different from other places?
- How do people, goods, and ideas move between places?
- How do people interact with the natural environment of a place?
• **Absolute location** describes the position of a place on the globe using the grid of longitude and latitude lines.

• **Relative location** describes the location of a place compared to other places.

• The **character of a place** consists of the place’s physical and human characteristics.

• A region is a group of places with at least one common physical or human characteristic, and may be determined by people’s **perceptions**, or viewpoints influenced by one’s own culture and experiences.

• **Formal regions** are areas in which a certain characteristic is found throughout them.

• **Functional regions** consist of a central place and the surrounding places affected by it.

• **Perceptual regions** are defined by people’s attitudes and feelings about areas.
• People, goods, and ideas move between places.
• Human beings have made enormous changes in their environment, both intentional and accidental.
• Changes to the environment can be favorable, making some places more habitable.
• Changes can also be destructive, altering an area’s ecosystem and straining local resources.
How do geographers use geographic information systems (GIS)?
   a) They use it to map the bottoms of the oceans.
   b) They use it to collect, analyze, and display geographic information.
   c) They use it to provide accurate information about location.
   d) They use it to record images of the earth’s surface.

How is absolute location described?
   a) It is described by its relation to other places.
   b) It is described as a group of places sharing a common characteristic.
   c) It is described by its physical and human characteristics.
   d) It is described by the grid formed by longitude and latitude lines.
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Chapter 1, Section 2

Changes Within the Earth

• How do scientists classify the earth’s major physical characteristics?
• What physical processes affect the earth’s crust?
• What theories help scientists understand the earth’s past?
Geologists envision three layers to the earth: the **core**, or center, the **mantle**, or a thick layer of rock around the core, and the **crust**, the thin rocky layer on the surface.

Landforms and other surface features make up the **lithosphere**.

The **atmosphere** is the layer of air, water, and other substances above the surface.

The water in lakes, rivers, and oceans, and water beneath the surface is the **hydrosphere**.

The large landmasses in the oceans are the **continents**.

Landforms are categorized by their differences in **relief**, or the differences in elevation from the highest to the lowest points.
Landforms are shaped first by forces that originate in the earth’s interior.

Volcanoes
- Volcanoes form when magma breaks through the earth’s crust.
- When lava flows evenly, it forms a plateau-like shield volcano.
- An ash and cinder eruption can produce small cinder cone volcanoes.
- Alternating explosive eruptions and smooth lava flows produce distinctive cone-shaped volcanoes.

Movements in the Crust
- Stresses between layers of rock can create folds and faults.
- The hardness of the rock and the strength of the movement determine whether a fold or fault is formed.
- Slow movements of rock layers along a fault produce almost unnoticeable changes.
- Large, sudden movements send out shockwaves, causing an earthquake.
According to the theory of plate tectonics, the lithosphere is broken up into a number of moving plates, on which continents and oceans ride.

The theories of continental drift and seafloor spreading support the theory of plate tectonics, and it is thought that the force of convection drives the movement of tectonic plates.
The movement of plates can create rift valleys, mountain ranges, volcanoes, faults, and earthquakes, depending on how the plates are moving.

The **Ring of Fire** is a group of volcanoes and volcanic islands around the rim of the Pacific Ocean.
What term is used to describe the water on and below the surface?

a) lithosphere  

b) atmosphere  

c) hydrosphere  

d) biosphere

Which process is used to describe the movements of tectonic plates?

a) subduction  

b) convergence  

c) faulting  

d) convection

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• What are the lasting effects of the two kinds of weathering — mechanical and chemical — on the physical landscape of a place?
• How do the three most common causes of erosion — water, wind, and glaciers — alter the physical landscape of a place?
Weathering is the breakdown of rock at or near the earth’s surface into smaller and smaller pieces.

**Mechanical Weathering**

Mechanical weathering occurs when the rock is physically weakened or broken. The most common mechanical weathering occurs when water freezes in cracks in rock.

**Chemical Weathering**

Chemical weathering alters the chemical makeup of rock. Water and carbon dioxide are the most important factors. Acid rain is a type of chemical weathering caused by air pollution and water.

**Observing Weathering**

The wearing effects of weather can be seen in any old stone structure. Weathering changes natural landforms over millions of years.
Erosion is the movement of weathered material such as gravel, soil, and sand.

Moving water is the single greatest cause of erosion, especially when carrying sediment.

Wind, the second major cause of erosion, can strip away exposed soil, but windblown deposits of loess, mineral-rich dust and silt, can also benefit farmers.

Glaciers, huge, slow-moving sheets of ice, are also major agents of erosion, as they pick up and drag along dirt, rocks, and boulders.

During the Ice Ages, glaciers covered up to a third of the earth’s surface.

In places where glaciers have melted and receded, they have left behind ridgelike piles of rocks and debris called moraines.
Acid rain is
a) a type of sediment.
b) a type of mechanical weathering.
c) wind-blown dust and silt.
d) a type of chemical weathering.

How can wind be a force of erosion?
a) It can deposit silt on an alluvial plain or delta.
b) It can quickly carve out valleys and canyons from solid rock.
c) It can carry away dry soil and sand.
d) It can act as a form of chemical weathering.
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