1 Geographical concepts and questions

Introduction

Geographers investigate and interpret the places that make up our world by exploring, analysing and understanding their characteristics and the processes that shape them. Geographers use a number of concepts in this process. Concepts are the big, organising ideas which, together, uniquely belong to Geography as a field of study.

VCE Geography is underpinned by ten interrelated key geographical concepts. These should form part of your vocabulary and guide you in your thinking, description, analysis, synthesis and communication in Geography. The concepts are used in conjunction with skills, and are applied to topics of study to create a uniquely geographical way of investigating and understanding the world.

In VCE Geography, the ten key geographical concepts are: place, scale, distance, distribution, movement, region, change, process, spatial association and sustainability. It will become clear through your work with the concepts in this chapter that they interconnect with, and support one another extensively.

The purpose of this chapter is to provide an understanding of, and some experience with, using key concepts that are of importance to the study of Geography, particularly as they relate to changing land use and land cover. Your aim should be to understand and apply each concept as a means of thinking and working geographically.
Key geographical concepts in context

**Place**

‘Where's your place?’ It is a common enough question to ask someone where they live, but there is more behind this question than you might think. A reply might be as generic as a suburb, as specific as a street address, or (with the aid of a smartphone) even a latitude and longitude. The latter two are regarded as absolute locations, there being no other place on Earth that meets that locational definition. In addition, a six-figure grid reference from a topographic map will allow you to give an absolute location. Location is the ‘where of place’ and is an important component of place in its own right. For example, Sassafras Creek flows through the town of Sassafras in Melbourne’s Dandenong Ranges. The latitude and longitude of Sassafras is 37° 52’ S latitude, 145° 21’ E longitude. Stringybark Creek flows through Mt Evelyn which is located at 38° 78’ S latitude, 145° 38’ E longitude. Until these are seen on a map or visited in the field, there is very little information about their respective locations. Both creeks run through very different rural–urban areas, with figures 1.1 and 1.2 providing more information on each place to enable you to infer more about each location.

Relative location refers to the distance and direction from one place to another. The use of place names, landmarks and regions helps to specify the relative location of one place by comparing to the location of another place.

Understanding a place relates to the perception of, and meaning people attach to a location and its immediate surroundings; this creates their ‘sense of place’. Though people may recognise the significance of the place as a home, the sense of place is naturally much greater for the person living there because of their direct attachment to, experiences in, and valuing of that place.

With the meaning of places comes value. A value could be the monetary value for a property, but for a natural landscape, the place is valued on the basis of other, less tangible qualities such as aesthetic beauty, untouched remoteness or, for some people, a spiritual significance and attachment to place going back many generations.

Place is important when considering land use change. Places on rural–urban fringes are constantly under pressure of development particularly in large, growing urban areas. Perceptions about change in some places will be affected depending on the impact on the environment (as shown in figures 1.1 and 1.2) and their significance to others. For example, is the change close to a national park or sites of Indigenous significance?

There are also significant places undergoing land cover change. For example, the extent of forest removal in Sumatra shown in figure 1.3 has produced different responses depending on individual values, beliefs and circumstances of people living close by and further away. People gaining employment and an income from forest products have one view about the change in land cover in Sumatra compared to geographers and biologists studying the same forests for biodiversity and water quality.

**Scale**

Scale refers to the size of something compared with something else and is used in one of two practical ways in Geography.

In one sense, we use scale on maps to determine the size relationship between the reality of something on the Earth’s surface and the size at which that thing can be represented on a much smaller map. The scale of a map influences how it can be used. Smaller-scale maps depict a larger area in less detail, often being useful to show an overview or context for what is being studied. A map of Australia and surrounding islands would be a small-scale map. The scale of such a map may be 1:16 000 000. Large-scale maps show smaller areas in greater detail. For example, topographic maps showing individual buildings and minor as well as major roads are usually large-scale maps. The scale of

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**Figure 1.3** Sumatra’s changing land cover, 1985–2009

- **1985**
  - Natural forest cover: 25.3 million hectares (58% of island)
  - No natural forest

- **2008–09**
  - Natural forest cover: 12.8 million hectares (29% of island)
  - Natural forest lost since 1985: 12.5 million hectares (49%)
  - No natural forest
Land cover changes resulting from deforestation, desertification, melting sea ice and sea level change vary in their scale of distribution and impact. At times these events are observed and measured at a local or national scale. A number of case studies in this textbook are provided at a range of scales. The example of loss of forest cover in Sumatra is a regional scale (see figure 1.3, page 3). Sometimes the change can be observed at a global scale such as surface temperature changes shown in figure 1.7.

Geographers require the ability to freely zoom in and zoom out in their scale view, when seeking explanations, relationships, influences and outcomes of and between phenomena.

**Distance**

Distance is measured in a number of ways. In its simplest form, it is the space between two different locations and can be determined using an absolute measure such as kilometres. Distance is used to assist with defining where things are in space, often also using direction. As an example, Orbost is 375 kilometres east of Melbourne.

Distance is clearly used as an indication of proximity, which itself often relates to the existence of relationships between things. Greatly distant phenomena are less likely to influence one another.

### Figure 1.6 Applying observational scale in Geography

<table>
<thead>
<tr>
<th>OBSERVATIONAL SCALE</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>Involving a limited area such as a farm, shopping centre, a suburb or rural town; the immediate area around a location</td>
</tr>
<tr>
<td>National</td>
<td>Involving an entire county, or being of national significance and impact</td>
</tr>
<tr>
<td>International</td>
<td>Involving two or more countries, crossing national borders</td>
</tr>
<tr>
<td>Global</td>
<td>Involving the entire Earth, or impacting on the planet as a whole</td>
</tr>
<tr>
<td>Regional</td>
<td>Flexibly defined, varies in size and nature (see Region)</td>
</tr>
</tbody>
</table>
**Figure 1.7** Global surface temperature changes between 1979 and 2005

**Figure 1.8** Plan Melbourne showing the predicted corridors of urban growth for Melbourne until 2050
Relative distance is a second broad category that can be measured in other ways. The amount of time it takes to travel a given distance (e.g., ‘I live 20 minutes away from here’), or the cost of travelling a certain distance (e.g., it’s expensive to fly to South America), are examples of relative distance. It is also possible to use less tangible measures such as psychological distance, where familiar places seem closer than less familiar ones (e.g., ‘I thought the trip to Mildura would be much faster by train’).

Distance can be applied in various ways to understand land use change. For example, when planning for growth in Melbourne’s urban area, planners need to consider the extent and distance of key transport infrastructure such as ports, airports, railways, and major highways and local roads. Distances from the CBD and other major cities and towns also need to be considered. Figure 1.8 shows the relevance of distance when considering Melbourne’s future growth.

**Distribution**

Distribution involves the arrangement of features or objects on the Earth’s surface. Distribution can occur at all scales, and often patterns can be observed and described as the arrangement or density of phenomena. Figure 1.9 shows the global distribution of glaciers, ice caps and ice sheets.

The distribution of land use change and land cover change is not uniform across the Earth or within a given county or region. This is due to a range of factors including differences in the physical landscape and natural environments. Significant differences in policies, management strategies and socioeconomic conditions also have an impact on the location and extent of land use change and land cover change.

**Movement**

Movement involves a change in location of phenomena such as people, goods and ideas through travel or flow. The development of transport infrastructure and mode of transport can have an impact on the movement of goods and services, and is an important consideration in urban planning and land use change. The movement of people to outer suburbs and urban–rural fringes can rapidly alter land use.
Movement is an important consideration in land cover change. Consider regions that are increasingly affected by desertification. The impact of this process can be the movement of people from rural to urban areas; or the movement of sand and soil no longer held in place by vegetation resulting in dust and sand storm events. Figure 1.10 shows an example of the movement of ice in the Chacaltaya Glacier, Bolivia, over time. The concepts of movement, change and distribution are involved in this example.

Where movement is concerned, distance, direction, the mechanism bringing about movement, in addition to the frequency, volume or magnitude of movement, may all be considered. Movement is represented in different ways graphically — colour and lines can show the date of spread while arrows can show the distance and direction of movement.

Region

A region is a definable area containing one or more characteristics that distinguish it from surrounding areas. Regions can be defined at a range of scales by physical characteristics such as mountain ranges and drainage basins, politically by official decisions about boundaries and names, and by common usage or for a given purpose by selecting a particular characteristic such as the western suburbs of Melbourne. Smaller regions can exist within larger ones, and different regions can overlap.

Region is important in terms of scale. Regions can be seen and defined at each of the local, national and international scales. Figure 1.11 provides examples of regions at a variety of scales that can be classified into various types. In this way, region itself can be used to represent a scale.

Deforestation, a land cover change, varies from region to region across the globe. The reasons for the differences can be associated with the amount of forest cover in each region, the policies in place to manage forests, socioeconomic pressures in each region, the use made of the wood and the type of land use replacing the forest. Figure 1.12 provides some information on the trees removed for industrial use and woodfuel, and shows patterns across regions.

Change

Change relates to the degree to which something alters, or is modified, over time. As phenomena studied in Geography are dynamic, they are often best understood by investigating how the focus of investigation has developed over space and time. It is also valuable to examine the effects and impacts of change, and this often relates to sustainability.
Change can be spatial and place-related. This can include changes in the location (that is, movement), size, distribution, density or pattern of phenomena. The transformation of the use, nature or quality of a place can also be identified. Change can be non-spatial and still be of relevance to Geography such as changes in land use policies. Varying occurrences of something over time can provide important information for geographers. Temporal change — or change over time — is one such example, such as the change in natural forest cover in Sumatra shown in figure 1.3 (see page 3).

Rates of change are important. In Geography change can be studied in time scales which range from millions of years for geological and landscape change, to a matter of a few years, months, days or even hours. Figure 1.13 shows the physical change in rainfall pattern in the Sahel. The data allows a consideration of rainfall change over time — is one such example, such as the change in climate patterns in the Sahel, Africa.

Process

Processes involve a series of ongoing events or steps that lead to the development, change or preservation of something. Often processes create cause-and-effect relationships between things. Processes can operate within and between places, and at a variety of scales. For example, planning processes such as the decision to build a freeway in an urban area can result in changed patterns of movement of people and have an impact on population densities. Examples of this can be seen in figure 1.14.

Complex interrelationships between different processes can have an impact on one another. The water cycle is a complex process which involves the movement of water in different physical states in the environment. Figure 1.15 shows the impact of urban change on the water cycle. Changes in land use can alter this process quite dramatically. The impact of increasing atmospheric carbon has resulted in measurable changes to the climate across the Earth. There are complex interrelationships between the processes of deforestation and climate change. Climate change has an impact on the rate of desertification, sea level rise and melting of glaciers and sea ice. The result of changes to complex processes has far-reaching impacts on both the environment and people. Chapters 2–9 investigate these processes further.

Spatial association

It is common to find things occurring together on the Earth’s surface. Spatial association is the degree to which two or more phenomena are similarly distributed or arranged on the Earth’s surface. Where distribution patterns of phenomena are consistently similar, a strong or high degree of spatial association exists. For example, there is a strong spatial association between areas of the Earth with low rainfall and low population density. When one phenomenon has a high frequency and another phenomenon is lower in frequency, there is a weak or low degree of spatial association. For example, there is a low spatial association between urban areas and the distribution of native animals in Australia. It is also possible for there to be no spatial association at all. The task of the geographer is to determine the degree of spatial association and explore potential underlying reasons for the existence of a relationship, or lack thereof.

Spatial association can also be viewed through the perspective of impacts. The coincidence between phenomena spatially might occur by chance, but the fact that they do have overlapping distributions has consequences. Figure 1.9 (see page 6) shows the...
distribution of glaciers, ice caps and ice sheets. The study of topographic and temperature maps in an atlas will show a high degree of spatial association between the location of ice areas and the distribution of average temperatures and high elevation areas.

Sustainability

Sustainability is a different concept from the others and it encourages the formation of evaluations or judgements about current situations and their potential change into the future. Sustainability is the capacity of the environment and social systems to support people and other living things now and into the future. It involves environmental, social, economic and political considerations. There is a strong relationship between changing land cover and climate change. Chapter 8 examines how changing land cover contributes to climate change and impacts negatively on the sustainability of forest areas. At a global scale temperature trends, as shown in figure 1.16, indicate the dramatic changes in global temperature over time.

Local land use change can have an impact on people and the environment, and the ability of the land to respond in the medium and long term. Clearing land for housing on the rural–urban fringe can trigger feedback mechanisms in surface water flow, infiltration rates and erosion (see figures 1.1 and 1.2, page 2). Changing land use from rural productivity to urban housing can have an impact on agricultural production and soil health. Careful planning must be included in any land use decisions for the best sustainable outcomes to be achieved from the change.

Figure 1.14 Processes involved in models of urban morphology

Figure 1.15 The impact of urban development on the water cycle
ACTIVITIES

Place

1. What is the difference between an absolute and a relative location? Give an example of each.

2. a. Using Google Earth or a smartphone GPS receiver, determine the absolute location of the following in latitude and longitude: the MCG; Melbourne Airport carpark; Lake Hattah in Hattah-Kulkyne National Park, Victoria.
   b. Describe your perceptions of these three places. How might this sense of place differ for other people?
   c. Using Google Earth, determine the relative location of each of these places from your home and your school.

3. Identify the land use for each place. How could each land use affect the sense of place of each? Discuss in small groups.

4. Examine figures 1.1 and 1.2 (see page 2).
   a. Contrast these places in terms of their probable surrounding land use.
   b. Explain how the process of urbanisation could cause a change in the natural stream habitat in Stringybark Creek.

5. Examine figure 1.3 (see page 3). Survey your family and friends about their perception of Sumatra in relation to the extent of forest lost. What are these perceptions based on? How might these perceptions differ for people living in Sumatra?
Activities continued

Scale
6. Write two summary statements with the following starting stems:
   - Small-scale maps tend to show . . .
   - Large-scale maps tend to show . . .
7. Express the scale in figure 1.4 (see page 4) as a ratio and a statement.
8. Use the map scale in figure 1.4 (see page 4) to calculate the largest area of heavy dust storm in China. What is the furthest distance that dusty areas have moved from Mongolia and in which direction?
9. Study figure 1.7 (see page 5). Write a short paragraph that describes the changes in surface temperatures between 1979 and 2005 at a global scale. What impact might these changes have on the extent of desertification and sea ice and glacier melting in specific regions?
10. Allocate an observational scale for the following land use and land cover changes (you may have to research the event): melting Greenland ice sheet; removal of Malaysian rainforests for palm oil plantations; thawing permafrost in the Arctic Circle; expanding desertification in the Sahel in Africa; glacial retreat in the European Alps; expanding urbanisation on Melbourne’s rural–urban fringe; redevelopment of inner urban areas to residential uses.

Distance
11. Using figure 1.8 (see page 5) and/or Google Earth’s distance measuring tool, calculate the approximate distance of the following in the predicted 2050 urban growth corridor:
   a. the Port of Hastings to the Port of Melbourne by rail
   b. the western interstate freight terminal to the Port of Geelong by road
   c. proposed south-east airport to Melbourne CBD by straight line.
12. Use Google Earth or an atlas to measure the distance between where you live and the location of Sassafras Creek (figure 1.1, page 2) and Stringybark Creek (figure 1.2, page 2).

Distribution
13. Refer to figure 1.9 and describe the distribution of glaciers, ice caps and ice sheets. Use an atlas to include specific place names in your description.
14. Choose one of the regions with glaciers and use Google Earth to zoom in to the area. Provide another description of the distribution of the glaciers at this different scale.

Movement
15. Study figure 1.10 (see page 6). How has movement been depicted in this map?
16. Use the scale of the map to measure the extent of glacial retreat in the Chacaltaya Glacier in Bolivia.
17. Study figure 1.4 (see page 4). Use the scale and distance to describe the movement of sand and dust from Mongolia.

Region
18. Study figure 1.12 (see page 7) and answer the following (use data from the graph in your answers):
   a. Which region has produced the greatest amount of industrial roundwood over time? Which has produced the least?
   b. Name the two regions that rely most heavily on removing wood for fuel?
   c. Which region has shown the greatest change in industrial roundwood production?
19. Create a table similar to figure 1.11 (see page 7) and provide three more examples for each region shown in relation to land use and/or land cover change.

Change
20. Conduct some research to provide two examples that can reflect each of the following geographical changes specifically related to land use/land cover change: movement, size, distribution and density. For each example, provide a location and its rate of change.
21. Use figure 1.13 (see page 8) to describe the change that has occurred to the average rainfall (isohyet line) in the Sahel. Describe the rate at which this change has taken place.
22. Compare the rates of change for desertification occurring in the Sahel and the rate of change in an earthquake disaster.
23. State the rate of change shown in figure 1.3 (see page 3).

Process
24. Refer to figure 1.14 (see page 9). Describe how each planning model could result in different land use change, population density and people movement.
25. Using the information provided in figure 1.15 (see page 9), outline how the water cycle process has altered as a result of urban change.

Spatial association
26. Use atlas maps which show world temperatures and elevation. Use these maps and figure 1.9 to describe the degree of spatial association between the location and distribution of glaciers, ice caps and ice sheets, and elevation and temperature.

Sustainability
27. Outline the pattern of temperature change that has occurred in the Northern Hemisphere and Southern Hemisphere, as well as globally, between 1850 and 2011 in figure 1.16.
28. Sustained increased global temperatures are having an impact on land cover, especially by increasing areas of desertification and melting sea ice and glaciers. Use two examples to outline how temperature changes are affecting the sustainability of environments and economies.
Analysing and interpreting data

In many cases in Geography, analysing and interpreting data relates directly or indirectly to the key geographical concepts. Developing a conceptual understanding and applying concepts to information analysis is the basis of many activities in this textbook. Some questions or tasks will include a concept by name, while others imply the use of one or more concepts in your thinking.

Tips for using concepts:

- In written responses to tasks that name a particular concept, it is usually appropriate to use that concept by name in your answer.
- Conceptual understanding can often be demonstrated visually; for example, in a map, graph or diagram. Examples of concepts shown well on maps include scale, distance, distribution, region, movement, change and spatial association. Commonly graphed examples include distribution, movement and change, particularly those involving a time scale. Process might be appropriately shown in a flow diagram.
- Higher quality written responses often communicate clear conceptual understanding, without necessarily using the concept by name.
- Avoid using concepts in responses unnecessarily. Doing so does not always show an understanding of the concept.

Throughout the chapters in this book, instructional (or directive) words are used in many activities. They specify how you should approach and complete a given task. Understanding these words and knowing what is expected of a response are important skills, and will improve the quality of your answers and enhance geographical understanding.

The following table provides explanations for instructional or directive terms found in this book, or likely to be used in class activities, assessments or fieldwork.

<p>| Account for | State reasons to explain an event or why something exists. |
| Analyse     | Show the essence of something (e.g. a situation or a map) by breaking it down into separate points and critically examining the relationship between each part. |
| Annotate    | Add labels, comments or explanatory notes to images, maps, graphs, diagrams or text. |
| Apply       | Use particular skills or incorporate specific information and ideas to a situation. |
| Assess      | Weigh up the value of or judge the strengths and weaknesses of something. Similar to ‘evaluate’, but more about the overall situation. |
| Calculate   | Use data or statistics provided in various forms to determine an answer. |
| Categorise  | Arrange or group by distinctive characteristics. |
| Clarify     | Make clear or simplify facts, opinions, issues or arguments. |
| Classify    | See ‘categorise’, above. |
| Comment on  | Give an opinion and explain reasons for support or a lack of support for an idea or issue. Can involve discussing the relevance or merit of a provided statement. |
| Compare     | Show the similarities or differences when examining two situations, events, ideas, features or processes. |
| Consider    | Think about what has been observed about something, being able to support observations using appropriate evidence. |
| Construct   | Put together an argument, point of view or a series of reasons to account for a particular situation. It also means to create, develop or draw a map, diagram, graph or table. |
| Contrast    | Highlight the differences when examining two or more situations, events, ideas, features or processes. |
| Define      | Provide a meaning or identify the essential qualities of a key term, word or expression. |
| Demonstrate | Show or provide proof by using examples from specific case studies, events or issues. |
| Describe    | Provide characteristics of a situation explaining what is observed. |</p>
<table>
<thead>
<tr>
<th>Design</th>
<th>Decide upon the look and functioning of a product such as a map, diagram or social survey.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinguish</td>
<td>Identify what is different between one or more similar situations or phenomena.</td>
</tr>
<tr>
<td>Discuss</td>
<td>Show understanding of a situation, where appropriate, by presenting both sides of a situation, issue or event. Include the strengths and weaknesses of available data. Usually involves more detail than ‘explain’.</td>
</tr>
<tr>
<td>Evaluate</td>
<td>Weigh up and interpret a statement, viewpoint or situation and state a conclusion about its value or importance. Similar to ‘assess’, but with a focus on the outcome or result. Include consideration of different opinions.</td>
</tr>
<tr>
<td>Evaluate the relative importance of</td>
<td>A combination of ‘rank’ and ‘evaluate’</td>
</tr>
<tr>
<td>Explain</td>
<td>Relate cause and effect. Give reasons why a situation exists or a process occurs.</td>
</tr>
<tr>
<td>Explore</td>
<td>Adopt a questioning approach, looking at all aspects of the situation, including points for and against. Similar to ‘discuss’.</td>
</tr>
<tr>
<td>Identify</td>
<td>Establish the nature of a situation by distinguishing its features and naming them.</td>
</tr>
<tr>
<td>Illustrate</td>
<td>Make something clear and explicit, by providing examples or evidence. May require the use of visual representations (e.g. maps, diagrams, tables, graphs and statistics).</td>
</tr>
<tr>
<td>Interpret</td>
<td>Examine visual data such as a map, graph or diagram, to make sense of what is being depicted and to draw conclusions.</td>
</tr>
<tr>
<td>Justify</td>
<td>Use examples or find sufficient evidence to show why, in your opinion, a viewpoint or conclusion is correct.</td>
</tr>
<tr>
<td>Observe</td>
<td>Identify significant items from numerical or visual data, or fieldwork.</td>
</tr>
<tr>
<td>Outline</td>
<td>Summarise the main points of given information, or events, in a situation.</td>
</tr>
<tr>
<td>Predict</td>
<td>Suggest what may happen in a given situation based on evidence gathered.</td>
</tr>
<tr>
<td>Quantify</td>
<td>Use numbers or statistics to describe a phenomenon and support conclusions.</td>
</tr>
<tr>
<td>Rank</td>
<td>Arrange factors, outcomes or elements in order of importance.</td>
</tr>
<tr>
<td>Recommend</td>
<td>Provide reasons in favour of a proposal.</td>
</tr>
<tr>
<td>Reflect on</td>
<td>Think about what has been presented, considered or observed and communicate those thoughts.</td>
</tr>
<tr>
<td>Sketch</td>
<td>Refers to a map, diagram or field drawing; a relatively simple, quick, hand-drawn representation that follows accepted, relevant conventions, but without an accurate scale.</td>
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<tr>
<td>Suggest</td>
<td>Present a hypothesis or theory about a particular situation.</td>
</tr>
<tr>
<td>Summarise</td>
<td>Retell concisely the relevant and major details of arguments, events and patterns.</td>
</tr>
<tr>
<td>To what extent do you agree</td>
<td>A clear statement of agreement, disagreement or partial agreement concerning a proposition is required. See ‘assess’.</td>
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