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Introduction

The *Heinemann Atlas Workbook 2nd Edition* is aimed primarily at students in Years 7–9 throughout Australia. The workbook improves the student's geography skills by providing facts, questions and activities necessary for further geography studies. It complements and extends the *Heinemann Atlas 5th Edition* by drawing on material contained in the atlas maps, graphics, and statistics.

The *Heinemann Atlas Workbook 2nd Edition* is organised into five sections: **Map essentials**, **Types of maps**, **More map skills**, **Graphs and statistics**, and **Extension activities**. Each section covers the essential geography skills the student needs to learn, often with examples of how to complete particular activities. The workbook concludes with a number of geography-related quizzes.

Aims Each unit begins with one or more aims and provides useful information.

handy hint Throughout the text there are handy hints that assist the student in their geography studies. There is space provided in the activity book to complete most activities.

There is a **Test yourself** or **Revision** unit at the end of sections 1, 2 and 3. This provides students with the opportunity to complete assessment in order to demonstrate their understanding of the skills.

icon to come This icon indicates that you can find relevant weblinks at www.pearsonplaces.com.au.

1.1 >> Maps and plans

Aim – to understand the usefulness of maps

Geography is the study of the physical and human environments from a **spatial** perspective. The spatial perspective is achieved through the use of maps.

Maps allow us to make sense of the world by helping us to:

- identify locations
- measure distances
- determine directions
- describe patterns
- explain patterns.

A wide range of data can be mapped including:

- landform features (e.g. rivers, hills, swamps, coastlines)
- human features (e.g. towns, roads, borders, farm types)
- economic data (e.g. income levels, employment by industry and so on)
- political data (e.g. national borders, spending on education, electorates)
- household information (e.g. ownership of computers, number of cars).

Maps are very important in your everyday life. Common examples of map use are:

- newspaper delivery
- public transport routes
- courier services
- firefighting plans
- shopping centre plans
- stadium seating.

A person who makes maps is called a **cartographer**.

Map projection

In your atlas there are many maps of the whole world or very large areas of the world. As you know, the world has a spherical shape, and the problem for map-makers is how to get this shape onto a flat surface. A globe is an accurate representation of the world but it is a little awkward to carry around.

Cartographers have devised a range of ways to show the Earth in two dimensions. These are called **map projections**.

handy hint

A map provides a bird's eye view

Examples

- **Mercator projection** – shows the shape of landmasses well but makes the mid and high latitudes (e.g. Europe and Greenland) look too big
- **Mollweide projection** – shows the relative size of landmasses but distorts the shape
- **Lambert conformal conic projection** – used for regional maps in the *Heinemann Atlas 5th Edition*. This projection uses two standard parallels of latitude, producing greatest accuracy along these parallels. Map distortion of landmasses is limited because of the distance between the parallels.
- **Modified cylindrical projection** – used for world maps in the *Heinemann Atlas 5th Edition*. This projection is a compromise designed to minimise distortions in both area and shape.

Map projections can now be readily calculated and plotted with the aid of computers. This has led to the production of maps that can be centred on any place in the world. The *Heinemann Atlas 5th Edition*, like most atlases produced in Australia and Asia, features maps with Australia in the centre.

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Activities

1 What is meant by a spatial view? _____

2 Look through the *Heinemann Atlas 5th Edition* and find an example of each of the following types of maps.

Type of map	Title of map	Page
Landform		
Political		
Economic activity		

3 In order to understand the litter problem in a school, the Geography class gathered data as shown on the maps in Figure 1.2. What patterns can you see on the maps? How will the maps help the school design a solution to the litter problem?

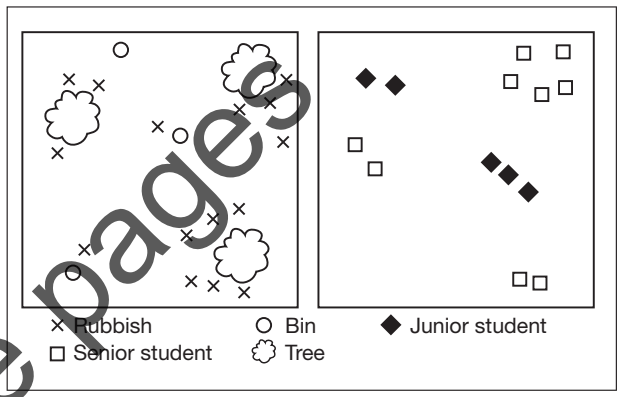

Figure 1.2 Mapping a school litter problem

4 Why is it hard to draw a really accurate map of the world?

5 List four maps you have used recently.

a _____ **b** _____

c _____ **d** _____

6 List two maps you have created and describe the purpose of each.

a _____

b _____

1.2 >> Symbols

Aim – to identify symbols on a map

- To make a map clear, **symbols** are used to represent a wide range of features such as towns, roads, rivers and types of vegetation.
- Some symbols look like, or suggest, the features they represent. For example, bridges, swamps and buildings on maps are often shown as simple drawings of these features.
- Some symbols represent items that can't be seen in the landscape, such as political boundaries and contour lines.
- The colours used for symbols may also provide a clue to their meaning. Blue, for example, is often used to represent water features. Different shades or patterns of green can show the density and type of vegetation.
- The importance of a feature might be shown by the size of the symbol, the thickness of the line or the size of the text used. The size and relative importance of towns and cities, for example, are often shown by the size of both the print and the accompanying symbol.

The meaning of each map symbol is usually explained in the map **key** or **legend**. This makes the key or legend an important part of any map, allowing you to interpret the features shown.

You will notice that many legends look similar. This is because map makers have agreed on a set of common symbols. These are known as conventional symbols and their use makes map reading easier. It may also mean that sometimes you will see symbols in a legend that do not appear on the map.

As well as a legend, a map should have a border around it, a north-facing arrow, a title, a scale and be labelled with the data source. The term BOLTSS is a good way to remember these mapping conventions.

Border – to clearly mark the region covered by the map

Orientation – to clearly show where north is on the map

Legend – to clearly show the meaning of the symbols used

Title – to make clear what the map is showing

Scale – to allow us to work out distances on the map

Source – to acknowledge where the data came from.

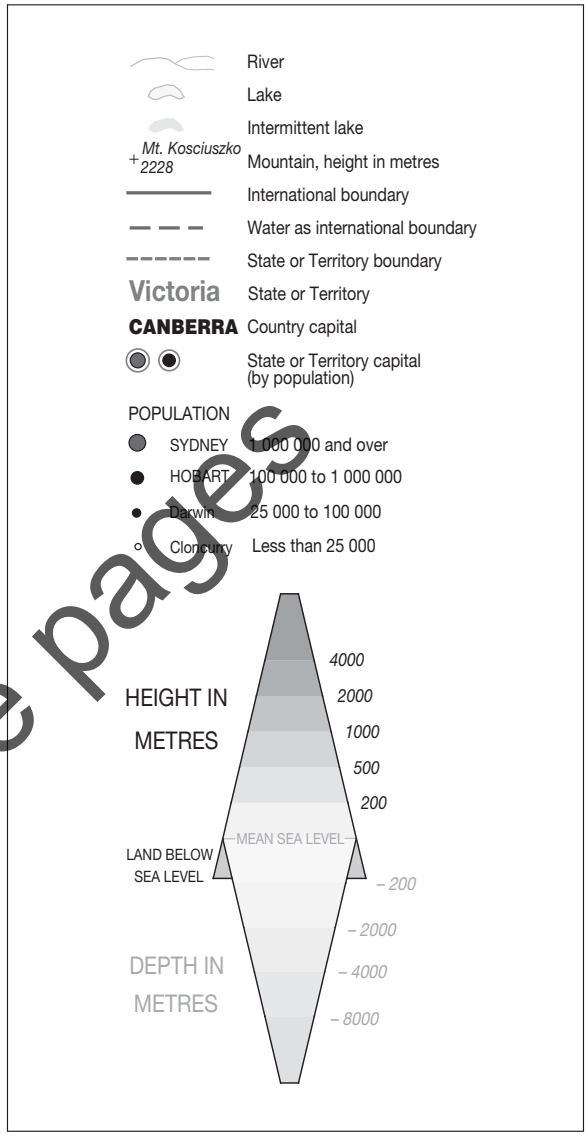

Figure 1.3 Typical key for topographic maps

handy hint

The legend is represented by L in BOLTSS.

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Activities

1 Refer to the map of New Guinea on pages 120–21 of the *Heinemann Atlas 5th Edition*.

a Describe the location of a wetland area.

_____

b Name three landform features with a height of 4000 m above sea level.

i _____ **ii** _____ **iii** _____

c Name two rivers in the north of Papua New Guinea.

i _____ **ii** _____

d Is the Banda Sea deeper than the Bismarck Sea? How can you tell?

_____

e Name three places near Port Moresby with a population of fewer than 25 000 people.

i _____ **ii** _____ **iii** _____

2 Refer to the map of North America on pages 180–81 of the *Heinemann Atlas 5th Edition*.

a Complete the following table outlining the symbols used to identify the human features on a map. (Use coloured pencils.)

Feature	Symbol
International boundary	
	SAN JOSE
Population of 10 000 000 and over	
Water as an international boundary	

b Write down the maximum number of countries you pass through if you go from Colombia to Mexico in a straight line. List them.

_____

3 Look at the map of Kununurra on page 52 of the *Heinemann Atlas 5th Edition* and identify four symbols that are in the legend but do not appear on the map.

1 _____ **2** _____

3 _____ **4** _____

4 Imagine you are to construct a map of your local area. Design 8 appropriate symbols that would help people read your map.

Symbol	Meaning	Symbol	Meaning
1		2	
3		4	
5		6	
7		8	

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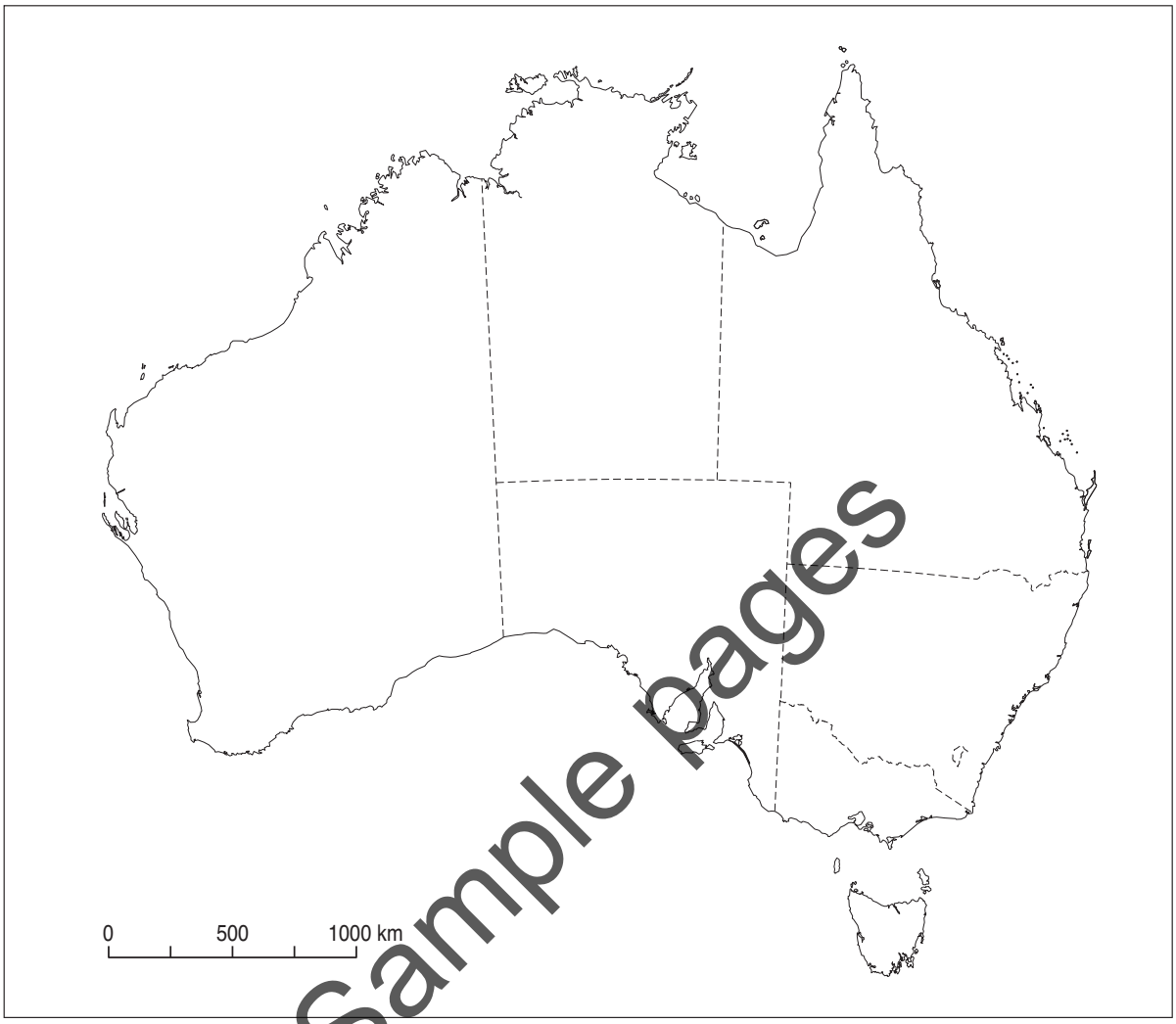

Figure 1.4 An outline map of Australia with a scale and containing State and Territory borders

5 Create a map of Australia. Make sure it includes a very clear legend and satisfies all the map conventions (BOLTSS).

Clearly locate the following: Great Dividing Range, Uluru, Murray–Darling Basin, an arid region, an area with relatively high potential for earthquakes, an area where cane toads are found, the State or Territory where you live and the capital city of your State or Territory.

The following pages of the *Heinemann Atlas 5th Edition* will help: 12–13, 16–17, 20–23, 26–7, 30–31.

1.3 >> Finding places

Aim – to locate places on a map

The following three examples each use two sets of intersecting lines to provide a way of finding the desired information.

Example 1: The alphanumeric grid

This system takes you to a **grid square**. The square is identified by a letter (the alpha component) and a number (the numeric component). This type of location system is commonly used in atlases and street directories.

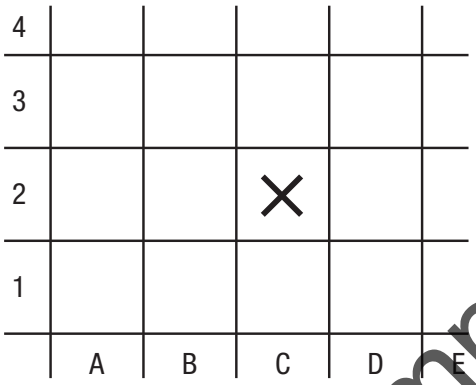

Figure 1.5 An alphanumeric grid. The letter is read first. Point X is at C2.

Locating places using an alphanumeric grid

To find reference C11 in Figure 1.6:

Step 1 Place a finger on the 'C' at the top of the map.

Step 2 Put another finger on the '11' at the side of the map.

Step 3 Move both fingers along the grid until they meet.

You are now in grid square C11.

handy hint

For each location system you read the lines in alphabetical order, alpha before numeric, latitude before longitude and easting before northing.

Activities

1 Refer to Figure 1.6.

a Name the following.

i the gardens in F5 _____

ii the street running from E9 to H10 _____

iii the station in E8 _____

iv the facilities available at Sutton Park in E14. _____

b A friend is travelling from Sydney to see you. She arrives at Blackheath Station and needs to get to Neate Ave in G6. Give directions to her.

_____

_____

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