

Contents

CHAPTER 1 What Will We Learn In Geography?

What is Geography?

What do geographers study?

What are geographical concepts?

How do geographers carry out their investigations?



2

4

6

11

15

CHAPTER 2 Geographical Investigations And Skills

How do we generate questions for investigations?

How do we gather data?

How do we exercise reasoning?

How do we reflect on the investigation?

20

23

27

55

68

CHAPTER 3 Tropical Rainforest

How Can We Save The Rainforest?

What are tropical rainforests?

What is deforestation?

Where are tropical rainforests found and which areas have been deforested?

Why does deforestation occur?

How does deforestation impact people and the environment?

How should we manage deforestation?



72

74

86

87

94

97

107

CHAPTER **4** **Water Supply**

Will Our Taps Run Dry?

What is water shortage?

Which locations in the world are facing water shortage?

Why does water shortage occur?

How does water shortage impact people and countries?

How can Singapore avoid water shortage?



120

122

131

142

148

156

CHAPTER **5** **Energy Resources**

How Can We Avoid An Energy Crisis?

What is an energy crisis?

Is the level of energy consumption the same everywhere?

Why do levels of energy consumption differ?

How would an energy crisis impact society?

How can an energy crisis be avoided?



176

178

195

200

205

208

World Political Map

228

World Relief Map

230

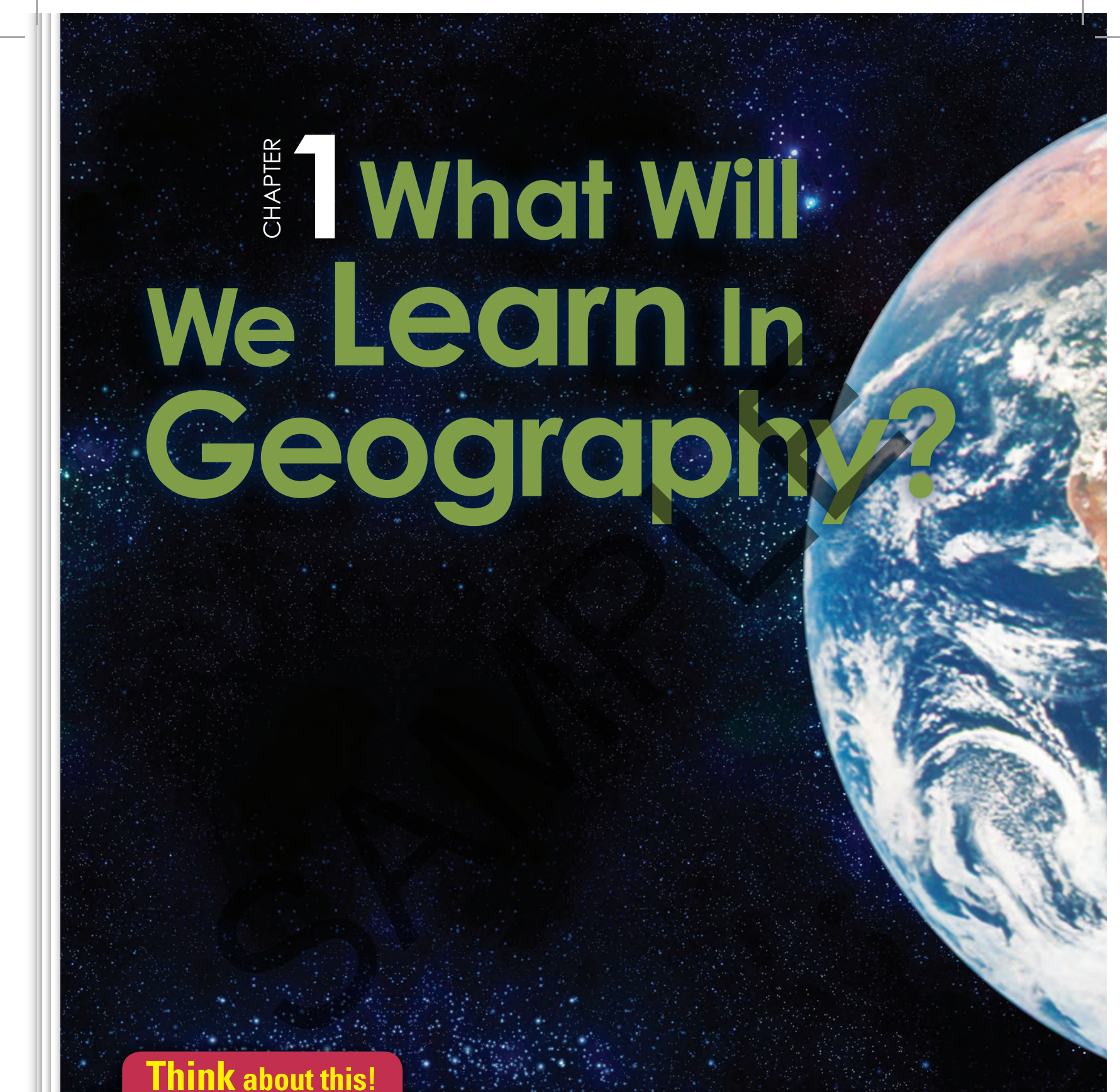
Index

232

Acknowledgements

234

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CHAPTER **1** What Will
We Learn In
Geography?

Think about this!

In 1972, astronauts on Apollo 17 blasted off into space. Figure 1.1 shows a photograph they took of the earth. One of the astronauts sent a message back saying '... we'd like to confirm, from the crew of Apollo 17, that the world is round'.

This photograph, known as 'The Blue Marble', was the first to capture the ice caps at the South Pole. Look at the photograph. What are some thoughts that come to your mind when you see our world from afar?



Figure 1.1 The Blue Marble.

You may have observed some features of the earth from the photograph. The deep blue areas are the oceans and seas. The white swirls are clouds in the sky and the brown parts are the land that we live on. Earth is currently the only planet we know of that

supports life. Humans, plants and animals live on this earth. How can we understand the world that we live in? How can we take care of the earth we call home?

What is Geography?



In a famous song, Louis Armstrong describes the 'wonderful world' that we live in (refer to Figure 1.2). He sings about nature: trees, flowers, skies and rainbows. He also sings about the relationships between people. How would you describe the world that you live in?

What a Wonderful World

I see trees of green, red roses too
I see them bloom for me and you
And I think to myself, what a wonderful world.

I see skies of blue and clouds of white
The bright blessed days, the dark sacred nights
And I think to myself, what a wonderful world.

The colours of the rainbow, so pretty in the sky
Are also on the faces of people going by
I see friends shaking hands, saying how do you do
They're really saying, I love you.

I hear babies crying, I watch them grow
They'll learn much more than I'll ever know
And I think to myself, what a wonderful world
Yes I think to myself, what a wonderful world.

Louis Armstrong

Bookmark it!

Listen to Louis Armstrong sing *What a Wonderful World* at https://archive.org/details/WhatAWonderfulWorld_118.

Bookmark it!

Google Earth is a virtual globe which allows you to explore the earth. Through Google Earth, you can discover places in the world and learn about their locations and weather conditions. You can even view photographs of these places. Download Google Earth at <http://earth.google.com>. Bookmark some interesting places that you like and share them with your friends!

The word 'geography' comes from two Greek words: 'geo' meaning 'earth' and 'graphy' meaning 'to write or study'. Thus, **Geography** is the study of the earth and everything that is on it. This includes the land, air, water, plants, animals and people. Geography is also about how people and places affect each other.

Figure 1.2 A song titled *What a Wonderful World*.



In Geography, you will learn about the natural environment and human environment. The natural environment includes forests, mountains and oceans. The human environment includes cities, agricultural areas, gardens, industrial estates and cultural tourist attractions. Today, most environments in the world are a combination of natural and human features. Geographers are interested in understanding how the natural and human environments affect each other.

Let's try it!

Refer to Figures 1.3 to 1.5.

- What are some similarities and differences between the places?
- With the help of these photographs, suggest a list of topics that are covered in Geography.



Figure 1.3 Rice terrace farming in southern China.



Figure 1.4 Floods in Brisbane, Australia, in 2011.



Figure 1.5 Mount Thamserku in the Himalayan mountain range, Asia.

In some areas, human activities are causing great and sometimes irreversible damage to the environment. For example, chopping down rainforest trees to make wood products affects the rainforest environment. As a junior geographer, you can start to think about how you can help protect and preserve our 'wonderful world'.

What do geographers study?



Geographers study various aspects of the natural and human environments. These aspects are generally classified as 'physical geography' and 'human geography'. As a junior geographer, you too will study aspects of physical geography and human geography, and appreciate how they are interconnected.

Physical geography

Some geographers are interested in **physical geography**. They seek to understand the earth's natural environment and its processes.

When doctors study our bodies, they examine the different parts of the human body. In the same way, geographers study the different parts that make up the earth. These parts, known as spheres, include the atmosphere, biosphere, hydrosphere and lithosphere. To understand the earth, you need to learn how the four spheres work and interact with one another. You will also learn that these spheres influence human activities and are in turn affected by humans' use of the earth.

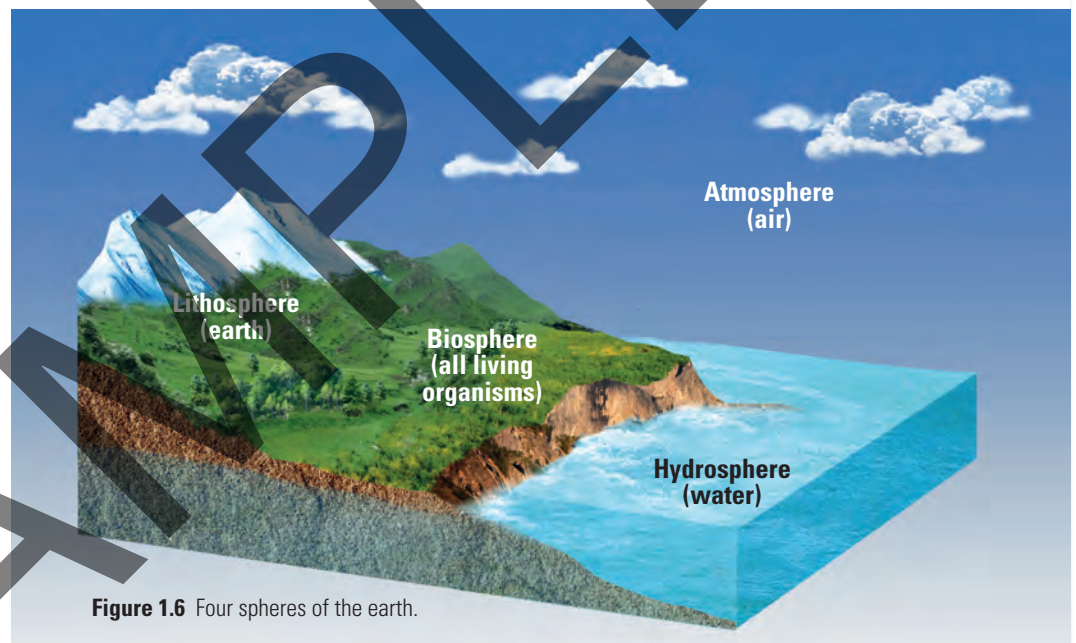


Figure 1.6 Four spheres of the earth.



Figure 1.7 Storm clouds forming in the atmosphere over the South Pacific Ocean.

Let us now explore the four different spheres of the earth.

The air surrounding the earth is known as the **atmosphere**.

- Most of the air is in the 15 kilometres closest to the earth.
- Much of the changes in weather elements such as temperature, winds, rainfall and humidity occur in the layer of atmosphere nearest to the earth's surface.
- Geographers investigate the processes in the atmosphere, for example, what causes rain (refer to Figure 1.7), and how and where large tropical storms or hurricanes form.
- Understanding atmospheric processes has helped people to predict the arrival of hurricanes.

The **biosphere** refers to all life on earth, including animals and plants.

- The biosphere plays an important role on earth. Plants absorb carbon dioxide from and release oxygen into the atmosphere. The food we eat comes from the biosphere.
- Geographers study the features of the biosphere, for example, features of the rainforest (refer to Figure 1.8).
- Geographers also look at how humans interact with the biosphere, for example, how humans clear areas of tropical rainforest to obtain timber. This, however, endangers plant and animal life to the point of extinction.

The **hydrosphere** refers to all the water on the earth. It includes water in the oceans, rivers, lakes, wetlands (refer to Figure 1.9) and ice sheets, as well as underground water and moisture in the air.

- Water covers about 70 per cent of the earth's surface.
- Water moves, in its different states, through the atmosphere, biosphere and lithosphere.
- Geographers look at the processes in the hydrosphere, for example, how water moves through the different spheres.
- Geographers also examine how the hydrosphere affects the way humans live, for example, how people living in areas with too little rain or areas prone to flooding manage their water resources.

The **lithosphere** is the outermost solid part of the earth. It consists of the rocks that make up mountains (refer to Figure 1.10), hills and plains.

- The lithosphere is tens of kilometres thick below the oceans and up to a hundred kilometres thick below the continents.
- Earthquakes occur in places where the lithosphere moves.
- Geographers study the features of the lithosphere, for example, how different landforms come about.
- Geographers also study how the lithosphere interrelates with the human environment, for example, how humans drill deep into the earth to obtain energy resources such as coal.

The earth's spheres are interconnected. A change in one sphere affects the others. The earth is a very complex system. Imagine how much more complicated it becomes when humans interact with nature! Everything is connected!



Figure 1.8 Tropical rainforest in Brazil, South America.



Figure 1.9 Coastal wetlands at Cumberland Island National Seashore in Georgia, United States of America.



Figure 1.10 Mountains in the Gobi Desert, Xinjiang, China.

Human geography

Some geographers are interested in **human geography**. They look at how and where people live.

Humans occupy almost every continent and they interact with the natural environment in many different ways. Geographers look at how human activities affect and are also affected by the natural environment.

Let us now take a look at the interactions between human activities and the natural environment.

Population refers to the total number of people living in a place.

- The world's population hit 7.3 billion in 2015. China and India made up 36.8 per cent of the total world population.
- Geographers look at population size, how fast the population is growing, and the movement of people from one place to another. These factors will affect the environment in terms of how resources are used. For example, rapid population growth in Manila, the capital of the Philippines, led it to become one of the most crowded cities in the world. In 2011, Manila's population density was 66,429 people per square kilometre. In comparison, Singapore's population density in 2011 was 7,260 people per square kilometre. Manila's high population density has caused problems such as traffic congestion (refer to Figure 1.11).

Figure 1.11 Rapid population growth in Manila, Philippines, has led to traffic congestion.



Settlements are places where people live, work and carry out activities. Such places include villages, towns and cities.

- Settlements can differ in the types of work available. People who live in the countryside are mainly farmers and sometimes miners or fishermen. In cities, people work in manufacturing or service industries.
- Geographers examine where and why people choose to develop settlements, the activities they carry out there and characteristics of settlements. For example, when populations increase, high-rise buildings may be built to house the larger number of people. You can see this happening in Singapore (refer to Figure 1.12).

Development refers to the use of resources, both natural and human, to achieve a higher standard of living.

- In the world, there are developed countries (DCs) and less developed countries (LDCs). DCs are countries which are generally richer, with a highly developed economy and advanced technological infrastructure. LDCs are countries which are generally poorer, with a less developed economy.
- Geographers investigate levels of income, the levels of technology used in farming and manufacturing, the products countries make and trade, and standards of living.
- LDCs often face challenges associated with basic living needs. For example, in some countries in Africa, many people live in poor housing conditions (refer to Figure 1.13).



Figure 1.12 A housing estate in Singapore.



Figure 1.13 A poor area in Soweto, South Africa.

Culture is the way people live, including their economic activities, traditional beliefs and religious practices.

- The daily activities of people make up a part of their culture. These activities include how they speak, what they wear, what they eat and where they live.
- Geographers study the cultures of different groups of people, how cultures form and how they spread. Culture can also be closely linked to natural landforms. For example, the large rock formation called Uluru is a sacred site for the Australian Aboriginal people (refer to Figure 1.14).



Figure 1.14 Uluru in Australia.

The general aspects listed on pages 6 to 10 are some things that geographers study. You will also study these aspects in the Secondary One and Secondary Two Geography courses.

In the Secondary One Geography course, you will learn about the earth's natural environment and its natural resources. **Natural resources** refer to any naturally occurring material used by people. Examples of natural resources include water, wood and fossil fuels. Resources can be **renewable** or **non-renewable**. Renewable resources such as wind and water can be used repeatedly without being depleted and are restored naturally. Non-renewable resources such as oil and copper are limited in quantity. They cannot be replaced as fast as they are being used up because they take millions of years to form.

Careful use of resources protects the environment and meets the needs of present and future generations. Through the topics of tropical rainforest, water supply and energy resources, you will:

- explore how humans obtain natural resources;
- consider the ways humans use natural resources and how this affects their supply; and
- examine ways to improve the management of resources for sustainable use.

In the Secondary Two Geography course, you will learn about living in urban areas. You will look at the challenges that cities face in trying to provide for the needs of their populations. These needs include housing, transportation and flood prevention.

Let's try it!

1. Select two aspects of physical geography and explain how they affect you.

2. Select two aspects of human geography and explain how they affect you.

What are geographical concepts?



When we study the natural and human environments in Geography, we use some key ideas to guide us. These ideas are known as geographical concepts. Geographical concepts include place, space, scale and environment.

Place



Figure 1.15 Taxco, a city in Mexico.



Figure 1.16 Sentosa, a resort island of Singapore.

What are some differences that you can see between Taxco and Sentosa (refer to Figures 1.15 and 1.16)?

A place is a part of the earth's surface that people identify and give meaning to. Your home is an important place for you because that is where you live.

Places are defined by their physical and human features. These features make each place unique and distinguishable; no two places are exactly alike. For example, Taxco in Mexico is a city built on a hill while Sentosa is a resort island of Singapore.

Geographers use the concept of place in their studies. For example, they might use the concept to understand why Taxco is built on a hill and why people settle there.

Walk around your neighbourhood and look at what makes it unique. How is it similar to other places you have been to and how is it different? What are the buildings in your neighbourhood and who are the people living in it?

Link it!



Places on earth can be accurately located using imaginary lines drawn on maps. For atlas maps which represent larger areas, latitudes and longitudes are used. For other maps which represent smaller areas, grid lines are used. Learn more about latitudes, longitudes and grid lines in Chapter 2.

Space

Look at Figure 1.17. What do you think the green patches represent?

Geographers study the way things are arranged or distributed over an area. They look for patterns of distribution and try to explain them. The concept of space helps them to do so. Space involves:

- examining the locations of things;
- identifying their distribution patterns; and
- explaining these patterns.

Geographers use the concept of space in their studies. For example, they might use the concept to study why tropical rainforests are located in the central part of Singapore. Maps and satellite images are especially useful for investigating space.



Figure 1.17 Satellite image of Singapore.

Scale

What information does Figure 1.18 show? How about Figure 1.19? How can this information be used?

Scale refers to the level at which a geographical feature or issue is examined. Geographers study a feature or an issue at various levels: local, national, regional and global. For example, they can study the number of tourists visiting Singapore at different scales:

- Local: investigate the daily number of visitors to a tourist attraction in Singapore
- National: investigate the yearly number of visitors to Singapore over a period of time (Figure 1.18)
- Regional: investigate the yearly number of visitors from ASEAN countries to various tourist attractions in Singapore
- Global: compare the tourist arrivals in Singapore and in other countries for a particular year (Figure 1.19)

Geographers use the concept of scale in their studies. By studying an issue at different scales, geographers can examine the outcomes at different levels. Also, scale indicates the significance of an issue. An issue at a global scale will probably have more impact than one at a local scale.



Figure 1.18 Number of tourist arrivals in Singapore. Adapted from: *The World Bank Group (2013)*.

Number of tourist arrivals in 2009	
Indonesia	6,324,000
Malaysia	23,646,000
Singapore	7,489,000
Thailand	14,150,000
Vietnam	3,747,000

Figure 1.19 Number of tourist arrivals in 2009 in some countries. Adapted from: *The World Bank Group (2013)*.

Environment

Which features of the Punggol Waterway Park in Singapore (refer to Figure 1.20) are natural? Which features are built by humans?

The environment refers to our surroundings. It can be either natural or human. It can also be a combination of both because many natural environments have been altered by humans.

Geographers study different environments to understand natural processes. Natural processes can include how rainforests grow and how rivers flow. Geographers also study the impact humans have on the natural environment. This helps them work towards wise management of the environment. In Figure 1.20, you would have observed that the natural environment has been changed by built features such as bridges and paths. Geographers might study how these built features affect the environment and how to manage the impact better.



Figure 1.20 Punggol Waterway Park in Singapore.

Let us take a look at how the geographical concepts can be illustrated using a topic in the Secondary One Geography course: tropical rainforest.



Figure 1.21 Bora Indians in the Amazon rainforest in Brazil.

The Amazon rainforest is a unique place. It is home to indigenous people such as the Bora Indians. The Bora Indians depend on the natural resources in the rainforest. They build houses and boats using tree trunks and leaves, and use the river for transport.



Figure 1.22 A clearing in the Amazon rainforest in Brazil.

The clearing of tropical rainforests in Brazil for coffee and sugar plantations has damaging consequences for the natural environment.

Place

Tropical rainforest:

Environment

Scale

How can we save the rainforest?

Space

The Brazilian government and non-governmental organisations (NGOs) have been taking steps to protect the Amazon rainforest. At the national level, government agencies and NGOs launched the Amazon Region Protected Areas (ARPA) programme. Through this, parks and reserves were created as protected areas. At the local level, the Amazon Conservation Team is working with indigenous people to locate illegal miners through Google Earth satellite images.

The satellite image below shows the distribution of tropical rainforests in western Brazil in 2008. The whole space used to be untouched rainforest, but most of it has been cleared.



Figure 1.23 Amazon Indians using Google Earth to locate illegal miners.



Figure 1.24 Dark green areas represent untouched rainforests. Brown areas are bare ground where rainforests have been cleared. Adapted from: National Aeronautics and Space Administration (NASA) (2008).

How do geographers carry out their investigations?



Earlier, you learnt that geographers have a wide range of interests and their investigations can be generally classified under physical geography and human geography. You have also been introduced to the concepts geographers use through an example. Now, how do you think geographers go about their investigations? What tools do they need?

Geographers begin their investigations by asking questions. Then, they collect data and analyse it. Finally, they present their findings which should answer the investigation question.

When you carry out your own geographical investigation, you too will work like a geographer and become an active learner and problem-solver.

What questions do geographers ask?

To conduct an investigation, geographers first identify an issue which can be discussed. The issue can be posed as a question. Then, geographers ask a series of questions that break down the issue into smaller parts. Asking questions can help identify the focus of the investigation.

There are four core geographical questions you could ask (refer to Figure 1.25). The geographical concepts that you have learnt guide the framing of these questions.

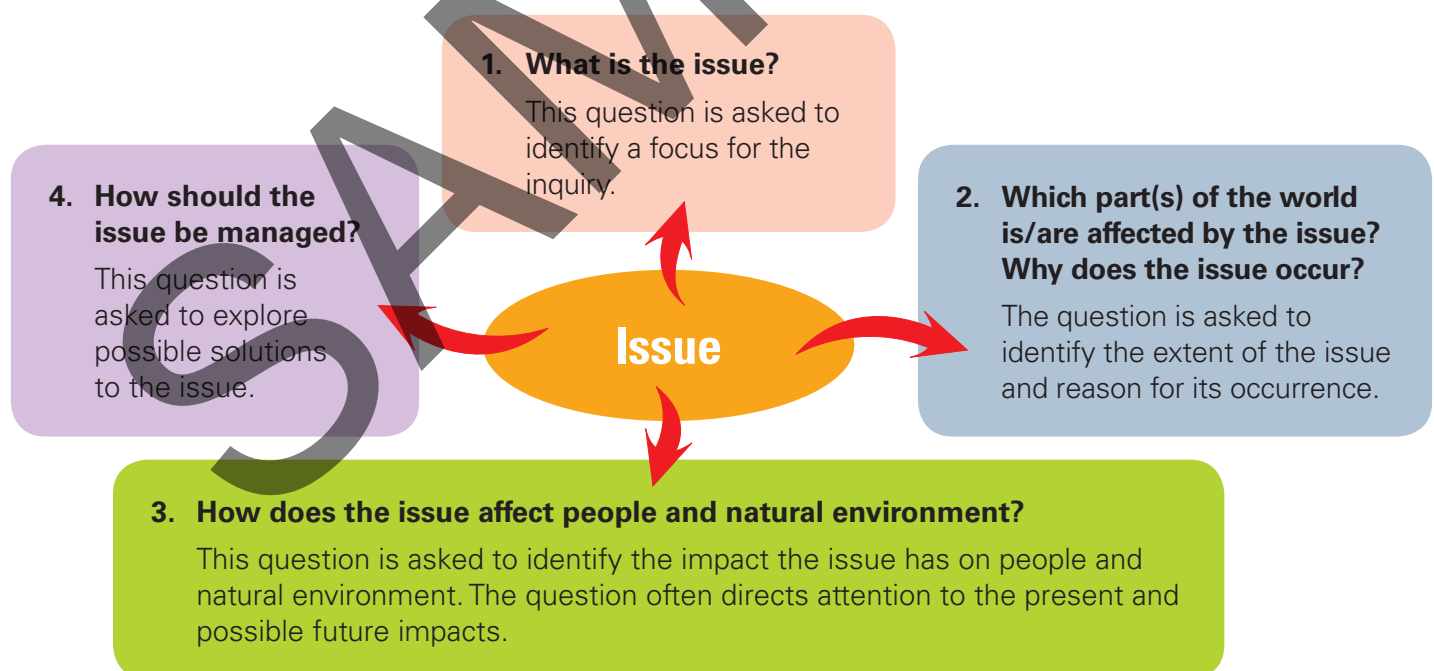
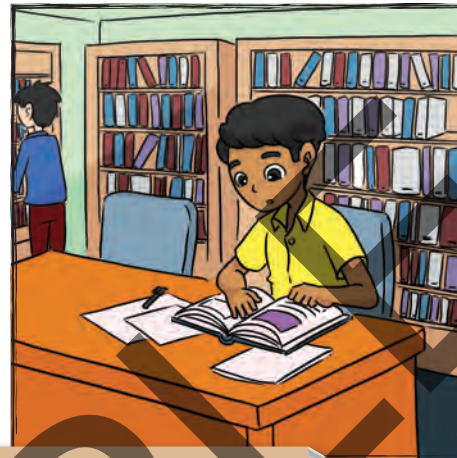


Figure 1.25 Core Questions of Geography.

The topics you will learn in Secondary One have guiding questions about issues related to tropical rainforests (refer to page 73), water supply (refer to page 121) and energy resources (refer to page 177).

How do geographers collect data and present their findings?

After geographers have identified the geographical issue and established their guiding questions, they proceed with their investigation as follows.

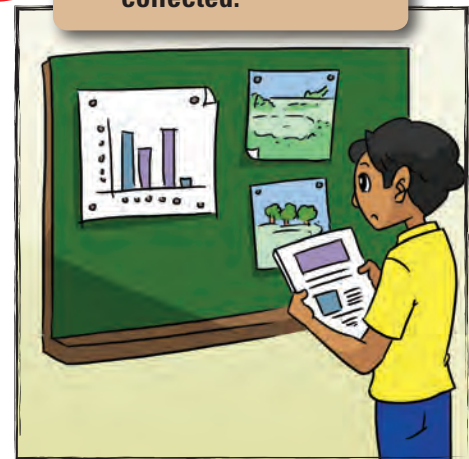


1. Geographers gather data through:

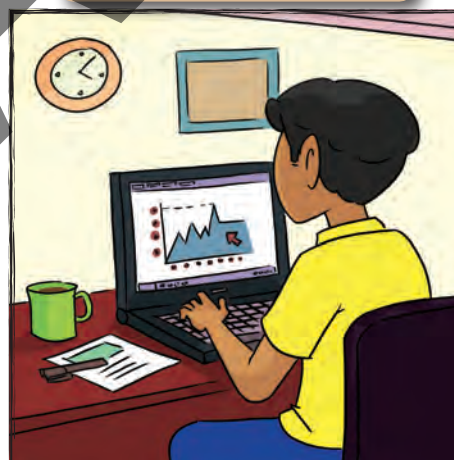
- **Fieldwork**
(e.g. observation, sampling, field sketching, surveying people)
- **Research**
(e.g. in libraries, on the Internet)



2. Geographers analyse the data collected.



3. Geographers present the findings in various forms (e.g. graphs, annotated photographs).



4. Geographers reflect on the investigation by asking:

- Was the investigation accurate?
- Which areas can be improved?



Figure 1.26 How geographers collect data and present findings.

Key Terms

Geography (p4): The study of the earth and everything that is on it. This includes the land, air, water, plants, animals and people. Geography is also about how people and places affect each other.

Physical geography (p6): The study of physical geography involves understanding the earth's natural environment and its processes.

Atmosphere (p6): The air surrounding the earth.

Biosphere (p7): All life on earth.

Hydrosphere (p7): All the water on the earth, including water in the oceans, rivers, lakes, wetlands and ice sheets, as well as underground water and moisture in the air.

Lithosphere (p7): The outermost solid part of the earth.

Human geography (p8): The study of human geography involves examining how and where people live.

Population (p8): The total number of people living in a place.

Settlements (p9): Places where people live, work and carry out activities.

Development (p9): The use of resources, both natural and human, to achieve a higher standard of living.

Culture (p10): The way people live, including their economic activities, traditional beliefs and religious practices.

Natural resources (p10): Any naturally occurring material used by people.

Renewable resources (p10): Resources such as wind and water which can be used repeatedly without being depleted and are restored naturally.

Non-renewable resources (p10): Resources such as oil and copper which are limited in quantity. They cannot be replaced as fast as they are being used up because they take millions of years to form.



Summary

What Will We Learn In Geography?

