1.1 What is a geographer?

In this unit, you will learn about:

- being a geographer
- asking geographical questions
- conducting geographical enquiries
- key aspects of studying people and places
- how to use geographical data, including maps.

Welcome to Progress in Geography: Key Stage 3

This book has been designed to help you make progress across Key Stage 3. It will help you to think like a geographer!

It is full of different types of geographical data, such as Photo B. There are also lots of maps in the book, including four big Ordnance Survey (OS) maps that open out from the cover as flaps, to use across different lessons. The Activities box on each lesson spread provides questions and activities to help you make sense of the geographical data and the new ideas and knowledge presented in each lesson. The back cover of the book explains the book layout – have a look.

A satellite image of the world taken from space

A good geographer:

- investigates and understands all these aspects of the world in which we live
- develops a locational knowledge of where places are in the world
- asks questions, and uses a wide range of geographical data to investigate places.

Geography helps you make sense of:

- the physical world – what our planet is like, the work of rivers, the sea and ice
- the human world – how and where people live, develop and earn a living
- the environmental world – habitats, such as mountains, forests, oceans, and how they develop and change.

Activities

1. Look at the vision statement flap (A) for Progress in Geography: Key Stage 3.
   a) What is a geographer?
   b) Create your own poster to show what a geographer knows, understands, values and can do.

2. What three aspects of the world does a geographer study?

3. Look at the front cover of this textbook.
   a) How does it show the world?
   b) What can you feel about this image?
   c) Which aspects of the world does the image show?

4. Geographers use questions to investigate places. Use the enquiry questions in Image C to describe what you can see in Photo B.

5. Look at the satellite image of the world in Photo A. Name the continents and oceans of the world, 1-11.

Stretch and challenge

Geography is happening every minute of the day. Before next lesson, find a news report in a newspaper or on a website. Describe what the story is about and why you think it is geographical. What type of geography is it about? Share your discovery next lesson with the class.

Copyright: Sample material
How has our knowledge of the world progressed over time?

Learning objective
To understand that our knowledge of the world map has progressed over time.

Mapmaking
Cartography, or mapmaking, has been an important aspect of human history for over 8,000 years. Geographers define a map as a graphic representation, presenting a spatial understanding of places, ideas, or events in the human and physical worlds. An accurate map of the world could not be constructed before the fourteenth century, because half of the planet had yet to be explored, or discovered. Maps A–C show examples of maps which demonstrate how our knowledge and understanding of the world has evolved through time.

1658
Map B was published in 1658 by the Dutch cartographer, Nicolaes Visscher. This map shows more of the world than Map A because by the seventeenth century new areas of the world had been discovered and explored. Sailing ships had allowed explorers from Europe to travel across the oceans and discover new lands in North and South America, and parts of Australia. But look closely at Map B. You will notice that the coastlines of these continents suddenly stop, as though the map is unfinished.

1 What is a geographer?

Activities
1 a) What is cartography?
b) What is a map?
2 Why has the development of maps been an important aspect of the development of the human race?
3 Look carefully at Map A.
a) When was the map drawn?
b) Who constructed the map?
c) What new knowledge was incorporated into the drawing of the map?
d) Describe how the world is shown on the map, and which parts are missing.
e) Explain why this was not an accurate representation of the world.
4 Look carefully at Map B.
a) When was the map constructed?
b) Describe how the world is depicted in this map.
c) Explain why this is a more detailed and accurate view of the world than Map A.
d) Which parts of the world are missing on this map?
5 Look carefully at C.
a) Explain how this image shows the world in a different way to Maps A and B.
b) Why do you think the first images of Earth from space affected how people thought about the planet?
6 Explain how mapping the world today has become much more detailed, accurate and readily available to people, than at the time of Maps A and B.

1969 and beyond
A new age of exploration began in the 1960s, leading to the NASA Apollo 11 space mission landing a man on the moon for the first time, in 1969. The images they sent back of Earth from space changed human perspectives about our planet. Space travel has become more commonplace today. Many satellites now circle the Earth sending back real-time images, like C, that are used to accurately map the planet. They are also used to monitor the changing environment and weather systems. Google Earth uses massive amounts of data to allow us to view the planet in great detail, as you will discover in this book.

Copyright: Sample material
In Lesson 1.1 you named all of the continents of the Earth. Chart A and Tables B and C give you details of the size of each continent and the number of people living there. In this lesson you will remind yourself of what you know about North and South America and Europe – the continents that you investigated in your primary school. As you work your way through this book you will complete your world regional studies by investigating Africa, Asia, the area known as the Middle East, and the largest country in the world, Russia.

**Learning objectives**
- To compare the size of the world’s continents and oceans.
- To know about the geography of North and South America, and Europe.

**Chart A**

<table>
<thead>
<tr>
<th>Continent</th>
<th>Area (millions of km²)</th>
<th>Population (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>44.6</td>
<td>4300</td>
</tr>
<tr>
<td>Africa</td>
<td>30.1</td>
<td>1111</td>
</tr>
<tr>
<td>North America</td>
<td>24.5</td>
<td>743</td>
</tr>
<tr>
<td>South America</td>
<td>17.8</td>
<td>565</td>
</tr>
<tr>
<td>Antarctica</td>
<td>13.2</td>
<td>407</td>
</tr>
<tr>
<td>Europe</td>
<td>9.9</td>
<td>38</td>
</tr>
<tr>
<td>Oceania</td>
<td>8.1</td>
<td>0</td>
</tr>
<tr>
<td>Antarctica</td>
<td>13.2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Table B**

<table>
<thead>
<tr>
<th>Continent</th>
<th>Millions of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>4300</td>
</tr>
<tr>
<td>Africa</td>
<td>1111</td>
</tr>
<tr>
<td>Europe</td>
<td>743</td>
</tr>
<tr>
<td>North America</td>
<td>565</td>
</tr>
<tr>
<td>South America</td>
<td>407</td>
</tr>
<tr>
<td>Oceania</td>
<td>38</td>
</tr>
<tr>
<td>Antarctica</td>
<td>0</td>
</tr>
</tbody>
</table>

**Activities**

1. Look carefully at Chart A.
   a) What percentage of the world is covered by 8 oceans?
   b) Which is the largest feature of the world?
2. Look carefully at Tables B and C.
   a) Draw a bar chart to show the area of each continent.
   b) Draw a bar chart to show the population of each continent.
3. Look carefully at Map D of the Americas.
   a) Name the countries labelled 1-6.
   b) Name the mountain ranges that run down the western side of North and South America.
4. Write a paragraph about what you know and have learnt about North and South America in your primary school.
5. Look carefully at Map E.
   a) Name the countries labelled 1 to 5 and the seas, 6 and 7.
   b) Name the four countries of the United Kingdom.
   c) Which six countries border France?
6. Write a paragraph about what you know and have learnt about the continent of Europe at your primary school.

**Copyright: Sample material**
Activities

1. What are lines of latitude and longitude?
2. a) Which line of latitude divides the world into two halves or hemispheres?
   b) What are these hemispheres called?
3. a) Which line of longitude divides the world into two halves of hemispheres?
   b) What are these hemispheres called?
4. There are five particularly important lines of latitude: Equator, Tropic of Cancer, Tropic of Capricorn, Arctic Circle and Antarctic Circle. Write these as a list, and next to each write the number of the line.
5. What is the Prime Meridian, and why was it created?
6. Look carefully at Map C and the location of points A–I:
   a) Which place is in Antarctica?
   b) Which places are north of the Arctic Circle?
   c) Match the following co-ordinates to places on the map:
      - 40N 120W, 0 80W, 40S 170E, 80S 0.
7. What is a Global Positioning System?
8. a) What is a degree confluence?
    b) What is the Degree Confluence Project trying to achieve?
9. Go to the Degree Confluence website: www.confluence.org
   a) Use the Search facility to find these two locations:
      - 30N 130E, 66N 18W
   b) For each location complete the following:
      i) Name the place, country, and co-ordinate.
      ii) Read the description of each place.
      iii) Look at one of the photos of each place and use the enquiry questions from Lesson 11 (pages 2–3) to describe the place.
10. The volunteers who have contributed to the Degree Confluence website are excellent geographers. Go to the vision statement flap for Progress in Geography. Which aspects of the vision are they showing in action?
1.5 Why do we use OS maps to investigate places?

Learning objectives
- To understand the idea of scale.
- To understand that different scales of map can be used for different purposes.

The Ordnance Survey (OS) is the national mapping agency of the United Kingdom. The name Ordnance Survey hints at how the organisation began, as part of a military strategy, mapping the Scottish Highlands following rebellion in 1745. The OS produces maps at a range of scales for people and businesses who use maps in different ways.

Maps A–C and Map-flap E show OS maps at different scales focused on the village of Mappleton. Scale is shown on a map in three ways:

- As a line called a linear scale.
- As a statement of scale.
- As a ratio – a scale of 1:50,000 means that one unit on the map represents 50,000 of the same unit on the ground.

A large-scale map shows a lot of detail, but not much area; a small-scale map shows a lot of area, but not much detail.

Activities

1. What is a geographer?

2. Why do we use OS maps to investigate places?

3. How do we draw maps to scale?

4. What are the three ways that the scale of a map is shown?

5. The scale of Map B is 2 cm to 1 km. Draw a linear scale for this map.

6. Which of the four maps of Mappleton, A–C and Map-flap E are large-scale maps and which are small-scale maps?

7. Find where Mappleton is located in the UK. Which map helped you?

8. Look carefully at Map A.
   a) Imagine you live in Beverley. Your family decide to visit Mappleton by car. Plan the best route to get there. Write a paragraph to describe the route.
   b) Why is A the best map to use for planning the route?

9. Look carefully at Map C.
   a) How is it different to Map A?
   b) Write the scale of this map as a statement.
   c) What new information does it provide about Mappleton compared to the other maps?
   d) Who might use this scale of map?
1.6 How do we locate features on OS maps?

Learning objectives
- To understand why and how the OS use symbols on maps.
- To be able to locate places on an OS map using four- and six-figure grid references.

To be able to identify and label different features, such as buildings or roads, on a map, we use symbols. Using symbols means we can find features quickly and clearly without the map being too cluttered or confusing. The OS have developed a wide range of symbols using different colours, shapes, lines, drawings and abbreviations to represent different features. There are different symbols for each scale of OS map. Diagram A shows some of the symbols used on 1:50 000 maps. OS maps have a key, or legend, explaining what each symbol represents.

Four-figure grid references
To give a four-figure grid reference for a feature on an OS map, we need to locate the feature in a grid system of vertical and horizontal lines called grid squares. Each grid square has a unique number known as a grid reference. The vertical lines are called eastings, because they increase in value eastwards on the map. The horizontal lines are called northings, because they increase in value northwards on the map.

To locate a feature more precisely within a grid square, such as the small green shaded square shown, we can use a six-figure grid reference:
- First, imagine that each grid square is divided into tenths (as shown on the grid).
- Read along from square 62 to count the tenths. There are 5. Read off the number: 625.
- Now read up from square 33 to count the tenths. There are 3. Read off the number: 333.
- These numbers combined provide the six-figure grid reference 625333.

Activities
1. Look carefully at the OS symbols shown in A. a) Draw a table with four columns headed: Drawings, Lines, Abbreviations, and Colours. b) Draw and name three symbols in the correct columns in your table.
2. Look at Map 1 of Flamborough Head on Map-Flag E. a) What evidence can you find on the map using symbols that suggests this area is used for tourism? b) Identify and name three features on the map from the land features section of the key shown in A.
3. Look at Map-Flag C of Teeside a) What is the four-figure grid reference for the following? i) Bran Sands ii) steel works iii) ore terminal?

Six-figure grid references
To locate a feature more precisely within a square, such as the small green shaded square shown, we can use a six-figure grid reference:
- First, imagine that each grid square is divided into tenths (as shown on the grid).
- Read along from square 62 to count the tenths. There are 5. Read off the number: 625.
- Now read up from square 33 to count the tenths. There are 3. Read off the number: 333.
- These numbers combined provide the six-figure grid reference 625333.
How do OS maps show height, direction and slopes?

Learning objectives
- To understand how height is shown on OS maps.
- To identify contour patterns.
- To recap the points of a compass and direction.

Height on OS maps is always shown in metres above sea level. There are three ways height is shown (see Legend A):

1. **Spot height**: marked by a black dot with the height in metres alongside it.
2. **Triangulation pillars**: often found on hill tops, shown by a blue triangle with a dot in the middle and the height marked next to it. These pillars were used by OS surveyors to measure the land, but they are not used anymore.
3. **Contour lines**: thin brown lines that join together places at the same height. The height is printed along the line. It is possible to use them to see the shape of the land (see B and E).

- If contour lines are close together the slope is steep; if they are far apart the slope is gentle (see B and C).
- Contour lines are usually drawn at 10 m intervals on a 1:50 000 scale map and at 5 m intervals on a 1:25 000 scale map.
- Thicker contour lines appear every 50 m.
- The numbers on contour lines are always displayed in ascending height; if the numbers increase it indicates an uphill slope, and if they decrease it indicates a downhill slope.

Visualising contours

A map is flat, but the land it is representing is three dimensional. The three ways OS maps show height allow you to get a mental picture from the map of what the landscape looks like. Image D shows what you need to imagine when looking at contour patterns – this is an OS map draped across a 3D computer representation of the landscape. Imagining this is a skill that takes real practice. Have a look at Map-flaps B and D of Helvellyn and Southampton.

**Activities**

1. In your primary school, you will have been introduced to and used the points of the compass, shown here. Make your own copy of the compass rose (E) and add the full name of the direction for each point.
2. Look carefully at Map-flap B of Helvellyn. Give the following directions from the mountain peak of Helvellyn to:
   - (a) Hepool Cove
   - (b) Nethermost Pike
   - (c) Red Tarn
   - (d) Harrison Stile at 312136
   - (e) The bridge over the river at 316210
3. Describe the three ways the Ordnance Survey shows height on maps.
4. Look at the Helvellyn map-flap again.
   - (a) Give four-figure grid references for an area that you think has a steep slope, and one that has a gentle slope.
   - (b) Explain your choice, and the evidence you used.
5. Look carefully at Map 1 of Flamborough on the map-flap (E) of the Holderness coast.
   - (a) Compare this map with Helvellyn, give map evidence about height to describe how the landscape and relief are different.
   - (b) The B1259 running east from the village of Flamborough has four spot heights marked along the road. Write them down and next to each locate them with a six-figure grid reference.
   - (c) Describe how height changes from Flamborough to Selwicks Bay.
   - (d) Why are there no triangulation pillars at Flamborough Head?
1.8 How can we use aerial photos with OS maps?

Learning objectives
- To compare a vertical aerial photo with an OS map of the same scale.
- To identify features and land uses on an aerial photograph.
- To research and analyse a vertical aerial photo of your local area.
- To draw a sketch map to show different land uses.

Aerial photographs show what the land looks like from above. They are taken from an aeroplane or more commonly, from satellites. It is possible to view vertical photographs of most places in the world, using computer software such as Google Earth. Image A is a vertical photograph of Southampton, showing the same area and using the same scale as Map-flap D.

You can use maps and photos like these to identify both physical and human geographical features. It is also possible to identify different land uses, such as buildings, roads, fields and industry.

The city of Southampton is near the coast. It is a built-up area and most of the land is used for housing and industry. Towns and cities like this are called urban areas. Look carefully at the area in the south-west corner of the photo. You should be able to identify lots of fields. More open areas like these in the countryside are called rural areas.

Activities
1. What is a vertical aerial photograph?
2. What are urban and rural areas?
3. Ten features are marked on Photo A with letters. Find these features on the photo and also on the OS Map-flap D of Southampton and your key of symbols for 1:50 000 maps. Copy and complete the following table to provide the name and six-figure grid reference for each feature.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Name of feature</th>
<th>Grid reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water area B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>River C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of road E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land use I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building J</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Draw a sketch map to show the area shown in the vertical Photo A.
   a) Compare the photo and Map-flap D and identify different land uses.
   b) Create your own key for each land use. Mark the land uses and shade and label them according to your key.

5. You can find similar maps and aerial photos for your local area. Either use your school access to the OS Digimap for Schools, Google Earth, or copies of photos and OS maps of your local area. If using a computer, enter your postcode using the search engine of the software. Create your own labelled map and photo for your local area showing land uses and key features of physical and human geography.
A good geographer investigates places by conducting fieldwork. When visiting a location you can use maps and observation to collect, record and present data. A group of students conducted fieldwork at Seaford, a seaside resort on the East Sussex coast. They used a 1:50 000 OS map of the area (Map E), and took photographs to record physical and human features they saw (photos E–K). Photos B and C show the group observing and recording features as a field-sketch.

1. Look carefully at the 1:50 000 OS map of the fieldwork study area and follow the route the students followed.
2. Rewrite the description of the route followed, adding the six-figure grid reference and the direction they walked at each point.
3. Photograph B was taken at 491982. Compare this view with the OS map. The students drew a field-sketch to record the view and key features.
   a) In which direction were they looking at the view?
   b) What two towns will they label on their sketch, at points 1 and 2 shown on the photo?
4. Look carefully at photos E–K and read the clues to identify where each one is on the OS map. In each case, give a six-figure grid reference for the feature shown.
5. You could conduct fieldwork like this for the locality of your new secondary school. You could use an OS map, plan a route, describe it, take photos and draw a field-sketch to record key features.

The group began the fieldwork along Seaford seafront, walking in a south-easterly direction towards the Martello Tower, and beyond that, Seaford Head.
In this unit, you have learnt:
- what it means to be a geographer
- to ask geographical questions
- to conduct geographical enquiries
- key aspects of studying people and places
- how to use geographical data, including maps.

Let’s see what you have remembered and understood!

The OS map (A) and Photo B show Scarborough in North Yorkshire. The headland and two sweeping bays, beautiful scenery and places to visit make it an exciting place to be. It has long been a favourite place for many people.

Activities
1. Make a list of the places you have investigated in this unit.
2. Why do you think maps are so important to our understanding of places?
3. How do you locate places:
   a) on a map of the world
   b) on an OS map?
4. What is the scale of OS map A, expressed as a statement and as a ratio?
5. Look carefully at Map A of Scarborough. Use the map and your key for maps at this scale to answer the following questions:
   a) What features or symbols are at the following grid references?
      i) 028896 ii) 039884 iii) 022869 iv) 047891 v) 051893
   b) Give the six-figure grid reference for the following features on the map:
      i) a viewpoint ii) a superstore iii) Throenby Mere iv) a lighthouse
   c) Look at the contour patterns on the map and describe what happens to the landscape on the western side of the town of Scarborough.
6. Look carefully at Photo B showing a beach at Scarborough and compare it with the OS map.
   a) Name and give the grid references of the locations numbered 1–7 on the photo.
   b) Look closely at OS map A and Photo B and use the enquiry questions – the 4Ws and 2Hs, to describe Scarborough.
   c) In which direction was the camera pointing?
7. Where is your favourite place? Describe what it’s like, and why you like it so much.
8. Look again at Map A (the vision statement for Progress in Geography: What have you learnt about being a geographer in this unit?)

Copyright: Sample material