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Social Sciences

Mastering map skills in Grades 4 to 7

Grade 4–7

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Contents

Introduction:

This guide focuses on map skills and should preferably be used with the *Oxford Primary Atlas for South Africa*. The atlas and this guide follow the Social Sciences CAPS on teaching map skills in Grades 4 to 7. It includes a selection of activities and worksheets. Answers to all activities in this guide, plus additional activities and worksheets, are available in the comprehensive *Oxford Primary Atlas for South Africa Teacher's Resource Book*, available for free download from www.oxford.co.za.

The activities in this guide facilitate the specific aims of Geography CAPS for Grades 4 to 7 by allowing opportunities for:

- understanding and working with maps, statistical data and photographs.
- developing problem-solving skills.
- prompting discussion and debate.
- developing curiosity about the world we live in by letting learners engage with and discuss interesting data about their provinces, country and the world. Learners are often asked to compare one data set with another and to think about why there are differences between them.
- a general understanding of the natural environment, different places, society and natural forces at work on Earth.
- highlighting our responsibilities towards the environment and fostering sensitivity regarding environmental issues.

- UNIT NUMBER -
ONE

CAPS map-skills related topics

The table below indicates the key map-skills related topics covered in this guide. Additional topics are covered in the *Oxford Primary Atlas for South Africa Teacher's Resource Book*, which is available for free download from www.oxford.co.za.

Topic	Pages in *Oxford Primary Atlas for South Africa*	Pages in this guide	Grade and term in CAPS
WHAT IS A MAP?			
What is a map?	4–5	3–5; 14–15	Grade 4 Term 2
HOW TO USE MAPS			
Symbols, keys and labels	6	6–8; 28	Grade 4 Term 2, Grade 7 Term 1
Distance and scale	7	24–26	Grade 6 Term 1, Grade 7 Term 1
Direction: north, south, east, west	12–13	11–12; 21	Grade 4 Term 2, Grade 5 Term 1
How do we find places on maps?	14	22–23	Grade 4 Term 2, Grade 7 Term 1
Latitude and longitude	15	22	Grade 6 Term 1
SOUTH AFRICA			
Provinces, cities and towns	16–17	29–31	Grade 4 Term 2
Land height, rivers and dams	18–19	13	Grade 5 Term 2
SOUTH AFRICA'S PROVINCES			
South Africa's provinces	33–41	18–19; 32	All Grades, but specifically Grade 6 Term 4
THE WORLD: CONTINENTS			
Africa	52–54	20	Grade 5 Term 1

- UNIT NUMBER -
TWO

Understanding what maps are

This unit covers:
- ✓ what a plan view (or bird's-eye view) is
- ✓ the differences between maps and photographs
- ✓ matching horizontal and vertical views
- ✓ how to draw a plan of an area
- ✓ why we use maps.

Plan views and side views

In order to understand and work with maps, learners need to understand that all maps are drawn from a 'bird's-eye' perspective. In other words, they show the world as it would appear if you were flying above it and looking straight down. A view from above is also called a plan view or an aerial view. When something is drawn like it would look from the side, it is called a side view.

Aerial photographs and maps

If you fly in an aeroplane and look down, you also have a 'bird's-eye view' of the area below. Some aeroplanes have cameras mounted under them, and these are used to take photographs of the area below. These photographs are called aerial photographs (meaning that they are taken from the air). An aerial photograph gives you a plan view of the Earth. It shows a real view of a place at a specific time: animals, people and vehicles that are in the area at that time are shown on the photograph. Maps, on the other hand, use symbols to represent real objects and do not include living things or moving objects. Maps are therefore usually clearer than photographs.

Turn to page 27 for a photocopiable worksheet on plan and side views.

TEACHING RESOURCE

How maps show height and depth

Plan views also include a vertical dimension. In other words, they can indicate height or depth. For example, a symbol can be used to show a tunnel that goes under a road, or a river going under a bridge. Colour can also be used to show the heights of different areas on a map and the depth of the sea.

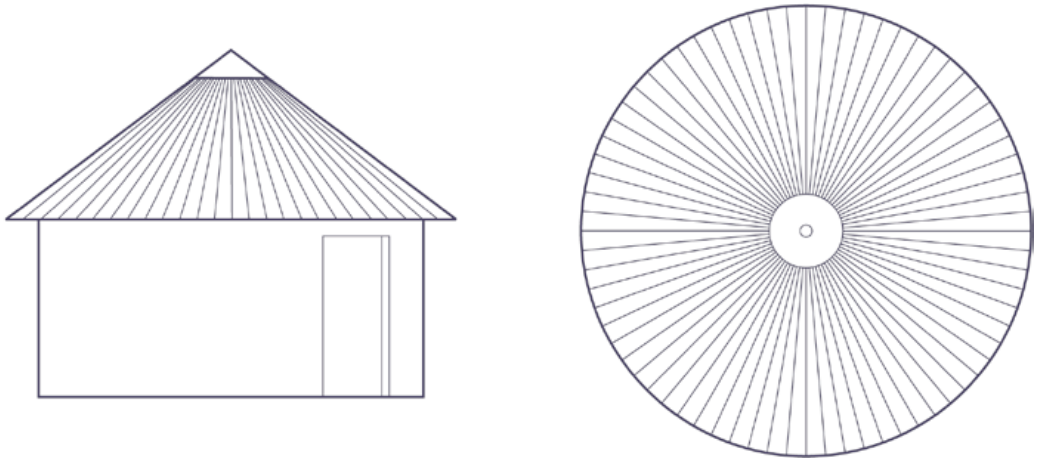
Introducing learners to maps

Most learners will have been introduced to maps in the Foundation Phase classes. However, the concept of plan views may still be confusing for young learners because they do not normally view the world from above; initially it may be difficult for them to visualise what an area would look like when viewed from above.

In order to work with plan views, learners need some understanding of the spatial relationship between things shown in the view: they need to consider the distances between places on a plan view, and they need to work out mentally where things would be in relation to each other and the space they are in. Simple plans of the classroom, or of their homes, can help them to understand this concept. Allow for the fact that most learners need a lot of practice before they can work confidently with plan views.

Teaching Tip

Introduce or revise the concept of plan views with Activity 1 on the following page.

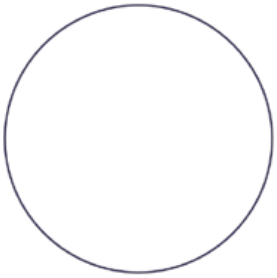


A side and plan view of a house

Once learners understand what a plan view is, they should be able to:
- match the plan view with a side view of the same object or area
- draw a plan view of a simple object (e.g. a table)
- draw a plan view of an area
- recognise depth (the vertical dimension) in a plan view
- identify correct spatial relationships in a plan view.

Activities

1. Give the learners various solid shapes. You can use tins, bottles, tubes and boxes. Ask learners to draw around these shapes to show what they would look like if they were viewed from above. Encourage them to look down at the solid shapes and identify any features that should be shown on their outlines. For example:



Draw the outline

Fill in details

Find the answers to these activities, plus additional activities, in the *Oxford Primary Atlas for South Africa Teacher's Resource Book*, available to download from www.oxford.co.za.

TEACHING RESOURCE

2. Draw a plan view of your classroom on the chalkboard – just the walls, with no details. Ask the learners to add to it:
   - the windows and door
   - the position of the chalkboard
   - the desks and any other furniture.
   - Get them to label the plan so that other people can interpret it. Labelling is an important aspect of mapping, and will be covered in more detail in the following unit.
3. Get the learners to look at the drawings on page 14 of this guide, taken from the *Oxford*

Primary Atlas for South Africa. Give them time to examine the drawings, and then ask them to do the following:

a. Name ten things or places they can see in the top picture of Whale Bay.
b. Then (working with a partner), look at the aerial view below it and identify where those ten places or objects are.
c. Find four things in the aerial view that they can't see in the first picture.
d. Look at the map on page 15 and find the following places: the sea, the roads, the river, and the school, and then identify three other places that they recognise on the map.

Why do we use maps?

We use maps for many reasons. The most obvious reasons are to find our way from one place to another, and to get a clear picture of our province, our country and the world. However, as learners work through their atlas, many other reasons should become apparent.

As learners work through the activities in this guide, they will also begin to develop their skills in other areas. They will start to use symbols and they will reduce items to fit their plan, thus beginning to work with scale. These skills are handled separately in later units and developed more formally through the activities included in those units.

- UNIT NUMBER -
THREE

How to use maps: symbols, keys and labels

This unit covers:
- ✓ signs and symbols
- ✓ different types of symbols on maps
- ✓ map conventions
- ✓ map keys.

Symbols and labels

Most learners will be familiar with a range of signs and symbols that are used in everyday life. For example, they might recognise and be able to understand traffic signs (stop signs, speed limit signs, zebra crossing lines), product logos (the Ouma rusks' grandma, the Simba lion), sports icons (the Olympic rings, the Springbok) and many others (such as the man and woman symbols used on public toilets). Make sure that learners understand that signs and symbols are often used to give information clearly and quickly without language or words.

The words we find on maps are called labels. Labels tell us the names of places, roads, streets, rivers, mountains, oceans, etc. Sometimes we do not understand the language in which the labels are written, so we look at the symbols to understand the map.

Encourage learners to look through their atlases and to say what the keys alongside different maps tell them.

Why do we find symbols on maps?

Symbols are used on maps to represent physical features (mountains, rivers), buildings (churches, farms, houses) and communications systems (roads, telephone lines, railways). Symbols are used because they allow the mapmaker to show detail without making the map difficult to read. They also allow people who do not understand the language of a particular place to read a map of that place.

It is important for learners to recognise that symbols on maps are used to represent features found in the real world. They should also understand that one symbol can be chosen to represent all varieties of a particular feature. For example, the symbol P might be used to show a post office. Everywhere a post office appears on the map, they will see P. This does not mean that all the post offices on the map look the same in the real world! On some maps, the symbols used for a post office may be different. For this reason, a key (sometimes called a legend) is normally found next to a map to show what the symbols represent.

Commercial crop farming in South Africa

Different kinds of symbols on maps

Turn to page 28 for a photocopiable worksheet on map symbols.

TEACHING RESOURCE

Points and icons

The most common symbols on maps showing large areas are points and icons. Points are used to show towns and cities. Icons are used to show land use, products or natural resources. You can find many examples of points and icons in the atlas. Encourage learners to look through their atlases to find examples of these.

Lines and arrows

Some information on maps is best shown by lines or arrows. Borders (such as borders between countries) and transport routes (roads, railway lines, etc.) are usually shown in this way. Lines used can vary in terms of thickness and style.

When some sort of movement or direction is indicated, the mapmaker normally uses an arrow. You can find examples of lines that show boundaries and transport routes on provincial maps.

Colours

There are several uses of colour on maps.

- On political maps, the colours show different countries.
- On the land-use maps, colours show what the land is used for, and the key tells you what the colours mean.
- Colours on maps can be used to show features such as water and height above sea level.
- On physical maps, colour is used to show differences in the height of the land above sea level.

Again, the key tells you what land height each colour represents.

Conventions used on maps

The symbols used on maps are called conventional signs. These signs are normally similar on all maps produced in a country.

Colour conventions

Certain colours are used on maps to indicate specific features:

- Blue is usually used to show water features such as oceans, rivers, dams and wetlands.
- Green is normally used for natural vegetation, and it is commonly found on physical maps.
- Green is also part of a graded set of colours used to indicate height on maps.
- Red is used on maps to show transport routes. Often, the main roads are shown in red.
- Brown is used to show landforms in the *Oxford Primary Atlas for South Africa*. You can see brown used in this way on the physical map of South Africa on page 13 of this guide.
- Black is used for many map labels. In addition, symbols for towns and human-made features may also be shown in black.

Did you know?

Official South African maps are produced by the Chief Directorate: Geo-Spatial Information, which also produces a list of conventional signs. Most other mapmakers in South Africa use these signs as well to make it easier to read and understand any map.

Map keys

The key to a map is essential for fully understanding the map. Think of the key as the tool for unlocking the meaning of the map. All thematic maps in the *Oxford Primary Atlas for South Africa* have a key that tells you what the symbols and colours used on the map represent. When learners draw their own maps, they should always provide a key.

Activities

1. Work through the activity on page 16 of this guide, which has been extracted from the *Oxford Primary Atlas for South Africa*. If you feel the need to give more practice in recognising symbols, draw these signs on the chalkboard. Ask learners to say what each one represents:

2. Turn to the map of Turtle Island on page 17 of this guide, which has been extracted from the *Oxford Primary Atlas for South Africa*. Answer these questions about the map:
   a. What colour line is used to show main roads?
   b. What symbol is used to show the clinic? Draw a clinic symbol in your book.
   c. What symbol shows the plantation? Draw it.
   d. Draw the mosque symbol in your book.
   e. How is the hiking trail shown?

3. Invent a holiday island of your own, and draw a map. Include a campsite, a road and anything else that you want. Label the map, colour it, design symbols to show features, give it a title and include a key.

4. Use a map of your own province to answer these questions:
   a. What colour line shows the border of the province?
   b. How many airports can you find in your province?
   c. How are national routes (roads) shown? Draw the symbol in your book.
   d. What is the symbol for built up areas? Draw it in your book.
   e. How are the labels for capital cities written?
   f. In what colour are the river labels written?

Find the answers to these activities, plus additional activities, in the *Oxford Primary Atlas for South Africa Teacher's Resource Book*, available to download from www.oxford.co.za.

TEACHING RESOURCE

- UNIT NUMBER -
FOUR

Different kinds of maps

This unit covers:
- ✓ physical maps
- ✓ political maps
- ✓ thematic maps (e.g. land-use maps)
- ✓ locator maps.

Atlases include many different types of maps designed to give different information about places. On pages 10–11 of the *Oxford Primary Atlas for South Africa*, you can see examples of some of the different kinds of maps that you will find in an atlas, namely a political map, a land-use map, a climate zone map, a rainfall map and a physical map. Each of these maps has a different purpose.

Physical maps

Physical maps show natural features such as rivers, lakes, deserts, mountains and other land-forms. Colour is normally used on these maps to show you the height of the land.

Turn to page 13 for a physical map of South Africa.

TEACHING RESOURCE

Political maps

Political maps show the features of a region created by people, such as towns and cities, and political divisions such as province boundaries and country boundaries. Colour is used on these maps only to distinguish between different places.

Turn to pages 18 to 20 for political maps of South Africa and Africa.

TEACHING RESOURCE

Thematic maps

Thematic maps give information about a particular topic, such as climate, what land is used for (land use), population, vegetation, rainfall, etc.

Thematic maps can use colour or shading to give information. (These are called chloropleth maps – but learners are not required to know this term at this level.)

Isoline maps are used mainly to show climate data. On these maps, lines are used to join places with equal temperature or rainfall measurements. The areas in between the isolines are shaded in different tones of the same colour. Lines that join places having the same rainfall are called isohyets. Lines joining places with the same temperatures are called isotherms. (These terms are given for teachers' information, but learners are not required to know them at this level.)

Locator maps

The maps of the provinces, on pages 33–41of the *Oxford Primary Atlas for South Africa*, include small maps of South Africa at the top of the page that are designed to show the relevant province in relation to the rest of the country. These are called locator maps.

Activities

1. Look at the political map of South Africa on pages 18 and 19 of this guide, which have been extracted from the *Oxford Primary Atlas for South Africa*. Use it to answer these questions:
   a. What is colour used for on this map?
   b. How many provinces are there? List all the provinces in a table like the one below.
   c. Add the capital of each province to the table.

Province	Capital

Find the answers to these activities, plus additional activities, in the *Oxford Primary Atlas for South Africa Teacher's Resource Book*, available to download from www.oxford.co.za.
TEACHING RESOURCE

2. Give the learners a world map (for example, the map on pages 42 and 43 of the atlas). Ask them to answer these questions.
   a. List the seven continents.
   b. List the four oceans.
   c. List three islands in the Atlantic Ocean.
   d. Name two seas in Asia.
   e. What is the main mountain range in South America called?
   f. Name a high mountain range in North America.
   g. Which two continents have no very high mountains?
   h. What famous African river flows from Lake Victoria to the Mediterranean Sea?
   i. Is the world mostly covered by land, or by sea?

- UNIT NUMBER -
FIVE

Direction

This unit covers:
- ✓ basic directions
- ✓ the points of the compass: north, south, east, and west
- ✓ other methods of finding direction
- ✓ orientating maps.

Basic directions

Most learners will have done some work on basic directions. At the very least, they should be able to follow directions using words like left, right, ahead, behind, in front of and next to. You might like to test what they know by playing some games and giving them instructions to follow to reach a particular place.

As learners learn to use maps they will need to work with the four cardinal points: north, south, east and west. They will also use the intermediate points: north-east, south-east, south-west and north-west.

Most maps, including those in the atlas, are positioned so that north is at the top edge. The direction arrow next to the map shows where north is.

North, south, east and west

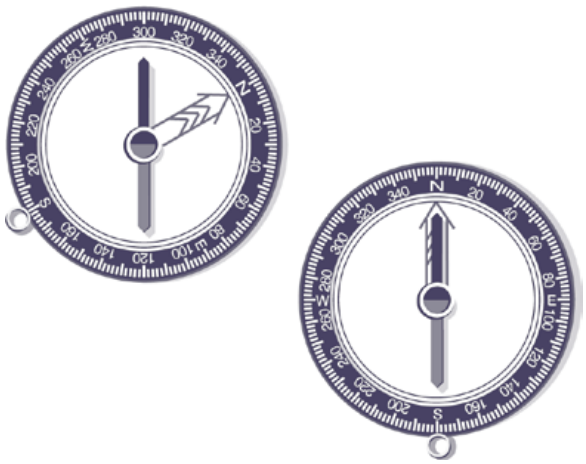
The sun always rises in the east and always sets in the west. In the southern hemisphere, the sun is at a position to the north of us at midday (12 o' clock). You can use this knowledge to get learners to understand where north, south, east and west are. We suggest you take them outside the classroom at midday; ask them to point out where the sun rises, where it sets, and where it is now. From that they can work out where north and south are. You can mark these in the school grounds using stones as markers (or on the classroom floor using a felt-tipped pen).

How a compass works

A compass is an instrument that is used to find north using the Earth's magnetic force. Inside each compass is a magnetic needle that is attracted by the natural magnetic force of the Earth. This force pulls (attracts) the needle so that it always points north. The needle is suspended in the compass and the person using the compass turns the base of the compass so that the letter N (or 0 degrees) is directly under the needle. You can see this in the diagrams on the right.

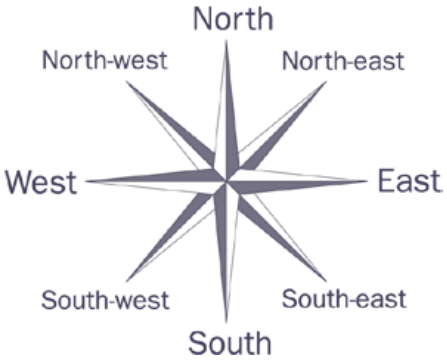
Once you know where north is, you can work out all the other compass directions.

Technically, the compass points to a point on the Earth known as magnetic north. Navigators find magnetic north and then use this point to work out where true north is. True north corresponds with the north pole of the Earth. The north pointers in the atlas point to true north.

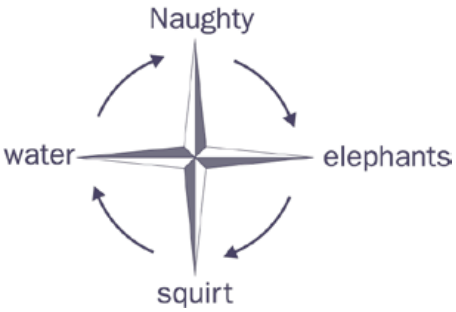


Points of the compass

The four main points on a compass – north, south, west and east – are called the cardinal points. In-between the cardinal points are other points that are named according to the directions between which they are found. You can see eight compass points on the diagram below.

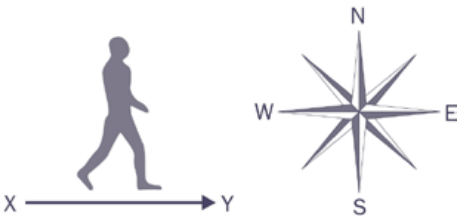


Make sure that learners know the names of the compass points. This mnemonic may help:

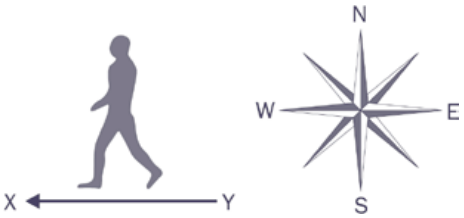


Giving directions using the points

On a map, you give directions according to the direction in which you are moving. For example:



The direction from X to Y above is east because the man is moving towards the east or in an easterly direction.



The direction from Y to X above is west because the man is moving towards the west or in a westerly direction.

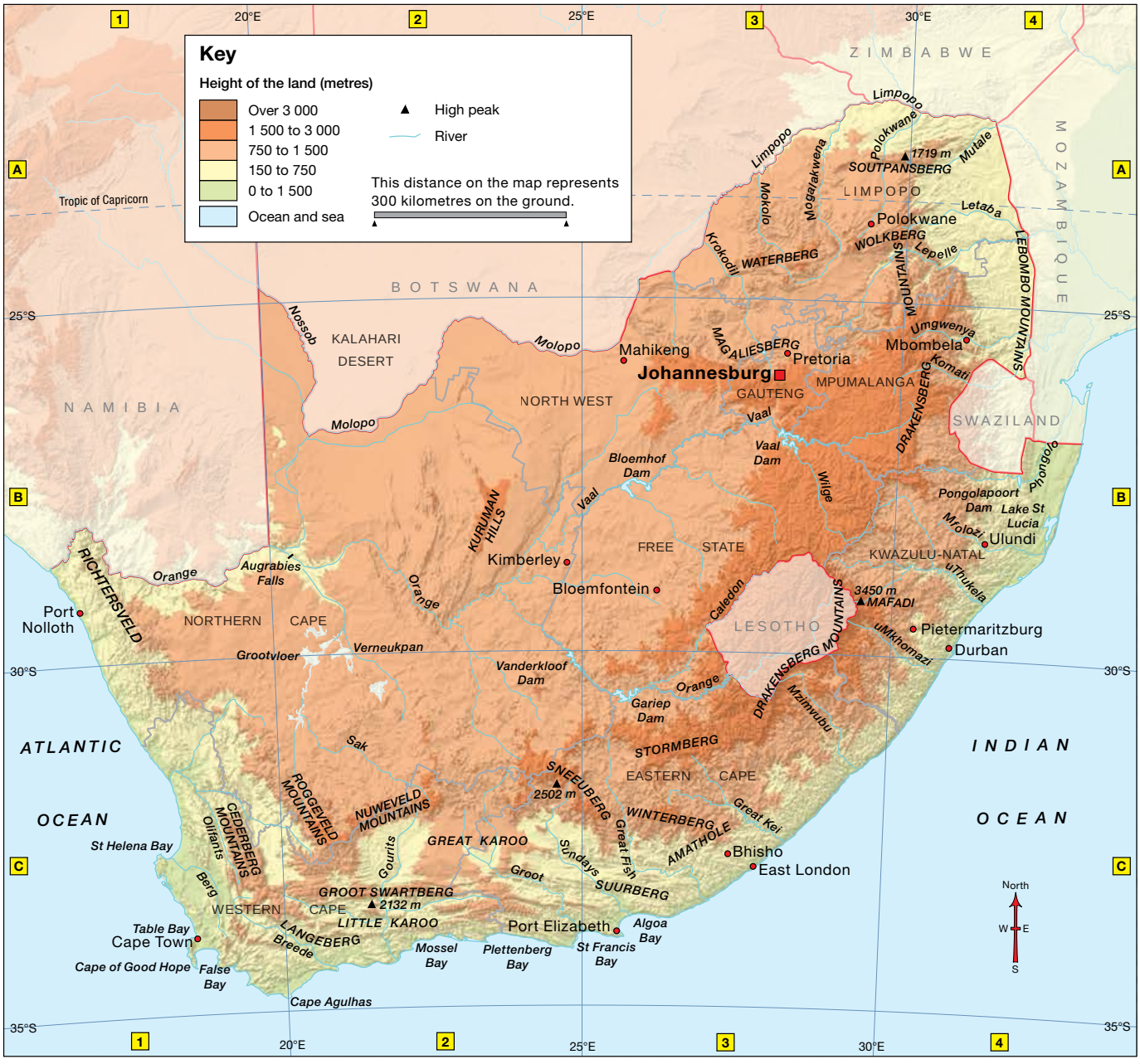
(Continued on page 21)

South Africa physical map

Land height, rivers and dams

This is a physical map of South Africa. It shows physical features such as the height of the land, and rivers and dams.

Total area: 1 220 813 square kilometres
Highest mountain: Mafadi, 3 450 metres above sea level
Longest river: Orange River, 2 100 kilometres
Length of coastline: 2 798 kilometres



Driest place: Alexander Bay, Northern Cape, with mean annual rainfall of 46 mm

Wettest place: Matiwa in Limpopo, with mean annual rainfall of 2 004 mm

Coldest place: Buffelsfontein near Molteno, Eastern Cape, with mean annual temperature of 11,3 °C and an annual average minimum temperature of 2,8 °C

Hottest place: Letaba in Limpopo, with mean annual temperature of 23,3 °C and an average annual maximum of 35 °C

Windiest place: Cape Point, Western Cape. Only 2% of all hours in the year are calm.

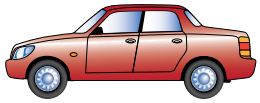
What is a map?

This is a picture of Whale Bay. Make a list of ten things you can see in the picture.

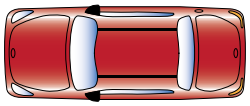
When an aeroplane pilot flies over Whale Bay and looks straight down, his or her view of the bay looks like the picture below. This kind of view is called an **aerial view**. An aerial view allows you to see many things that you would not see if you were on the ground.

The diagram at the bottom of this page shows what the aerial view looks like when it is drawn as a plan. A plan such as this is called a **map**. Maps are drawn by **cartographers**. Notice that the cars, boats and people are not on the map. This is because maps show only things that are fixed parts of the Earth, such as the ocean, rivers, mountains, roads, bridges and buildings.

When we look at something from the side, we have a **side view**. When we look down at something, we have a **plan view**. Look at the side and plan views below.

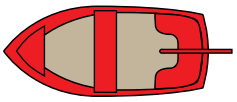


A side view of a car



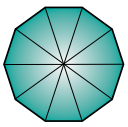
A plan view of a car

A side view of a boat



A plan view of a boat

A side view of an umbrella



A plan view of an umbrella

WORD CHECK

aerial – from above, in the air

aerial view – the view when you look down on a place from above

map – plan, diagram of an area as seen from above

cartographer – person who draws maps

plan view – what you see when you look at something from above

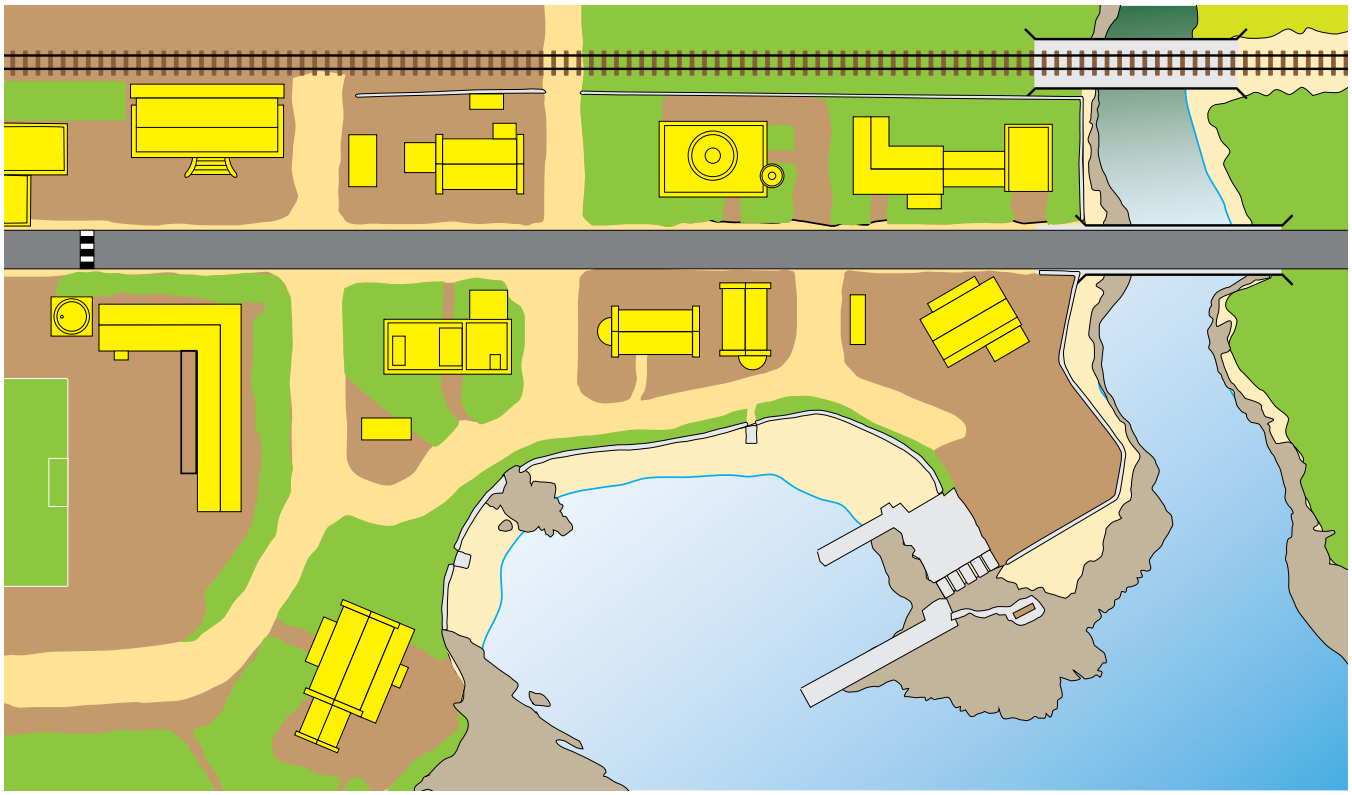
side view – what you see when you look at something from the side

See if you can find the following things in the map below:

- **roads**
- **the river**
- **the school.**

Make a list of three other things you can see on the map.

A cartographer has started drawing a map of Whale Bay.



How to use maps

Symbols, keys and labels

A symbol is a simple picture that has a special meaning. The first symbol on the right means “No dogs allowed”. What do these other symbols on the right mean?

We use symbols because they are simple and easy to understand. People who speak different languages can all understand the same symbol.

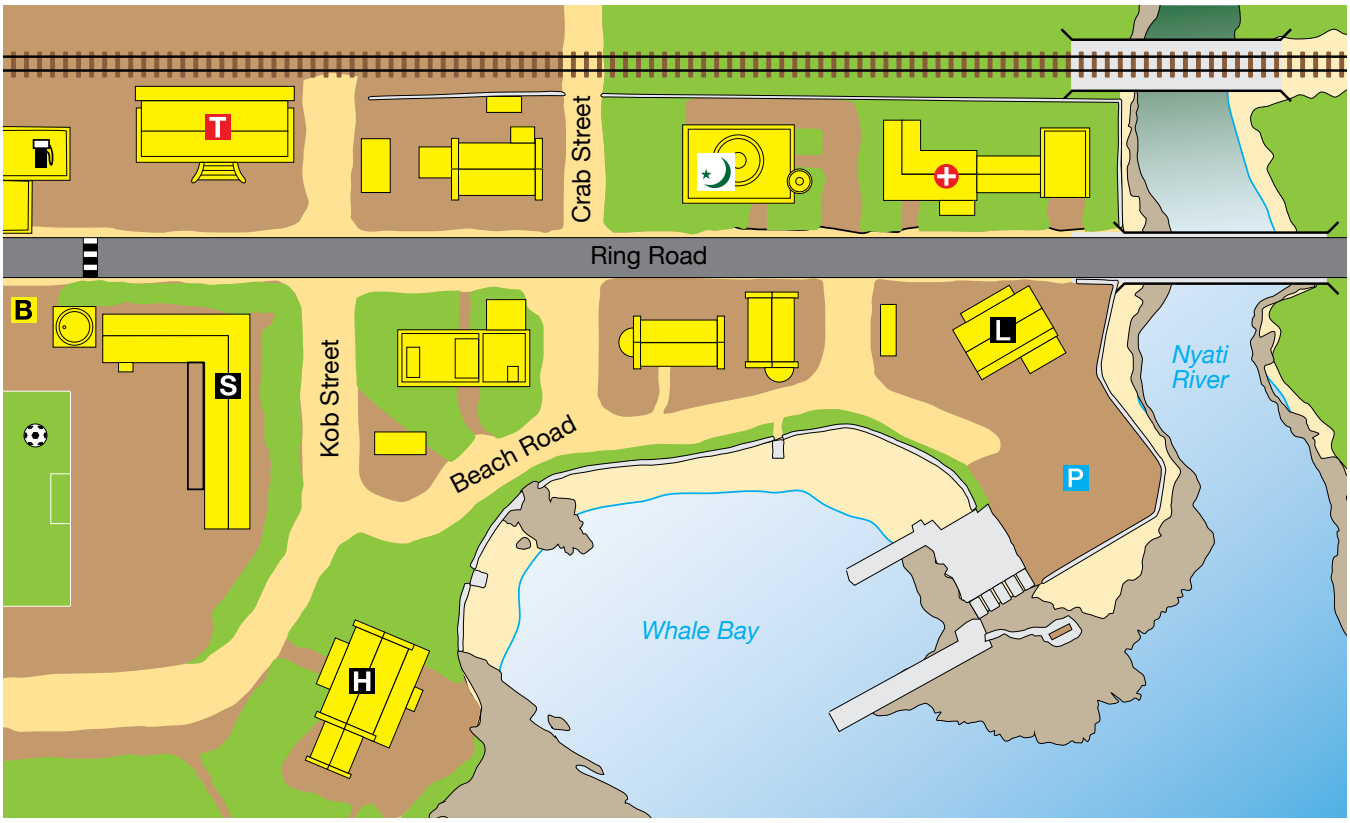
Most maps use symbols to represent things. Look at the map key below. The map key explains what the symbols mean. Maps also have labels that give the names of places, such as streets and rivers.

KEY

tarred road	B bus stop	mosque
gravel road	P parking	clinic
bridge	T train station	petrol station
railway line	S school	H hotel
sports field	L library	pedestrian crossing

See if you can find the following places in the map below:

- **the clinic**
- **the mosque**
- **the train station.**

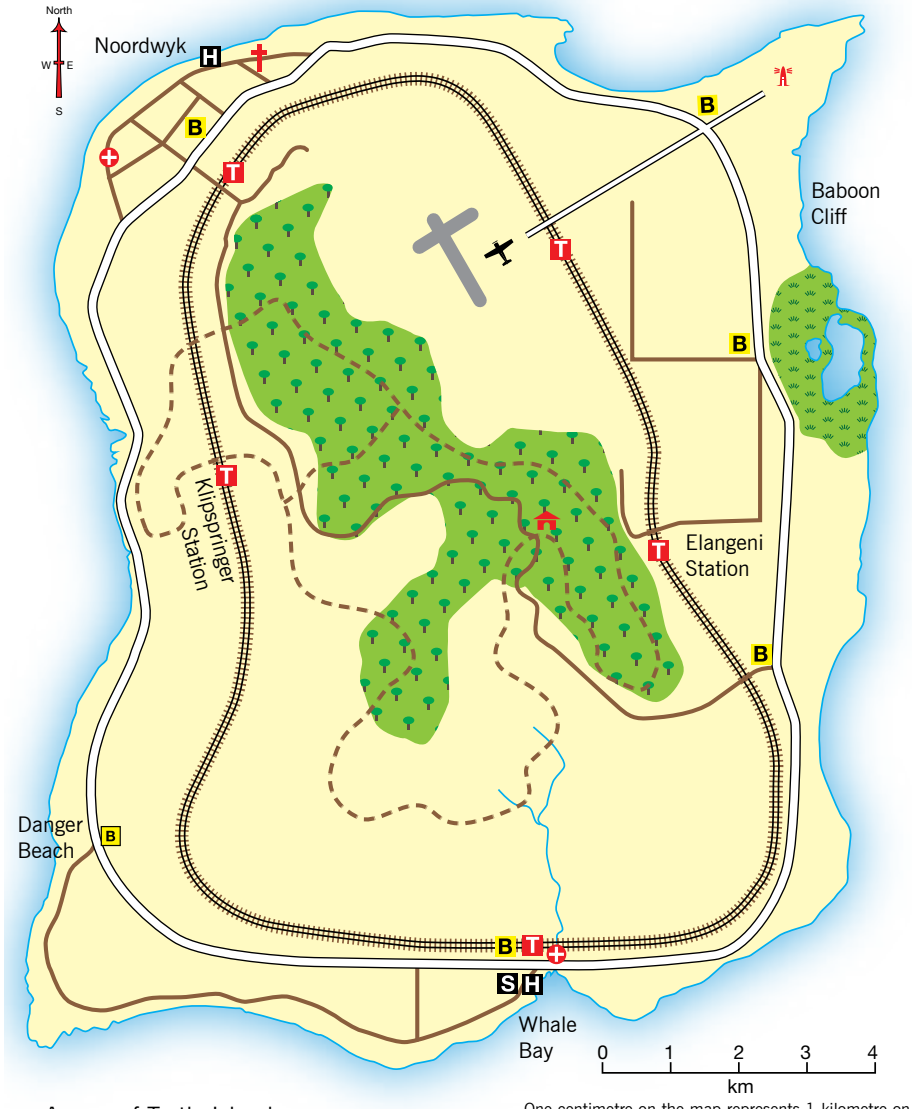


Distance and scale

Maps are much smaller than the places they represent. Maps are drawn to scale. This means that the map is drawn an exact number of times smaller than the area on the ground.

The scale of a map is the relationship between the distance represented on the map and the same distance on the ground. There are three different types of scale shown on the map of Turtle Island below.

1. A **word scale** tells you how much 1 centimetre on the map represents on the ground. The word scale on the map below is "1 centimetre on the map measures 1 kilometre on the ground".
2. A **line scale** is a numbered line showing how many metres or kilometres are represented by the distance that you have measured.
3. A **ratio scale** shows scale as numbers. The ratio for the map of Turtle Island is 1:100 000.



A map of Turtle Island

One centimetre on the map represents 1 kilometre on the ground, or 1 cm represents 1 km, or 1:100 000.

Use the line scale to work out how far the lighthouse is from the airport:

1. Use your ruler to measure the distance of the road between the lighthouse and the airport.
2. Write down the distance. (You should get 4 centimetres.)
3. Position the ruler next to the line scale. The distance measured on the map matches the 4 kilometre mark on the line scale. The distance between the lighthouse and the airport is therefore 4 km (4 × 1 = 4).

Use the word scale to work out how far the lighthouse is from the airport:

1. According to the word scale, 1 centimetre on the map represents 1 kilometre on the ground.
2. This means 4 centimetres on the map represents 4 × 1 kilometres (4 × 1 = 4).
3. The distance between the lighthouse and the airport is therefore 4 km.

KEY

B bus stop	airfield
T train station	main road
H hotel	road
S school	hiking trail
clinic	plantation
mosque	wetland
church	railway line
hut	river
lighthouse	

Find Whale Bay on the map of Turtle Island on the left. Then look back at the map of Whale Bay on page 6. The map on this page is drawn to a smaller scale than the map on page 6. This is why you can see a larger area, but with less detail.

South Africa political map

Provinces, cities and towns

The South African coat of arms

The national flower is the protea.

The national animal is the springbok.

The blue crane is the national bird.

The galjoen is the national fish.

The yellowwood is South Africa's national tree.

The South African flag

Facts about South Africa

Population (total number of people): 51 770 560 in 2011

Official languages: Afrikaans, English, isiNdebele, isiXhosa, isiZulu, Sesotho, Sesotho sa Leboa (or Sepedi), Setswana, siSwati, Tshivenda, Xitsonga

National capitals:

- *Cape Town* (the legislative capital)
- *Pretoria* (the administrative capital)
- *Bloemfontein* (the judicial capital and home of the supreme court)

South Africa political map
Page 17, *Oxford Primary Atlas for South Africa*

Africa political map

(Continued from page 12)

Wind directions

Wind directions are different. These are given according to where the wind is blowing from:

This wind is a westerly wind because it is blowing from the west.

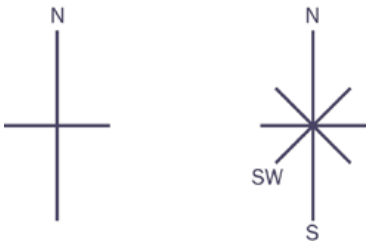
This wind is an easterly wind because it is blowing from the east.

Orientating a map

When you are using a map in the real world to plot a route or find your way, you need to turn the map so that north on the map faces north in the place where you are standing. This allows you to match the positions of features on the map and on the ground. In the classroom it is not practical or necessary to orientate maps in this way.

Activities

1. Draw these compass roses. Fill in the missing directions:



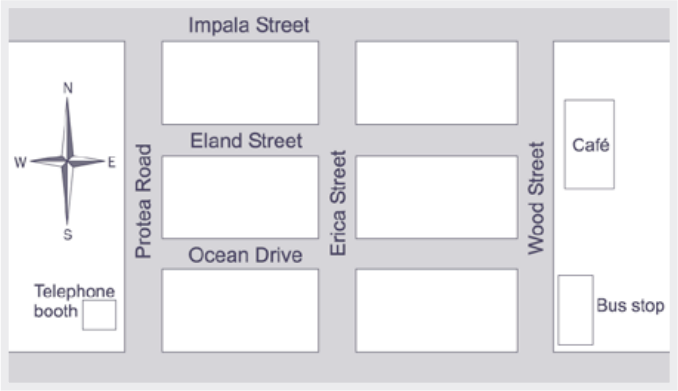
Find the answers to these activities, plus additional activities, in the *Oxford Primary Atlas for South Africa Teacher's Resource Book*, available to download from www.oxford.co.za.

TEACHING RESOURCE

2. Draw this map and get learners to give directions from one place to another.

What direction will you be walking in if you go from:
a. Impala Street to Eland Street
b. Protea Road to Erica Street
c. Protea Road to Wood Street
d. Ocean Drive to Impala Street
e. Erica Street to Protea Road
f. the bus stop to the café
g. the café to the phone booth
h. the phone booth to the café?

If learners need more practice with this, add more questions.



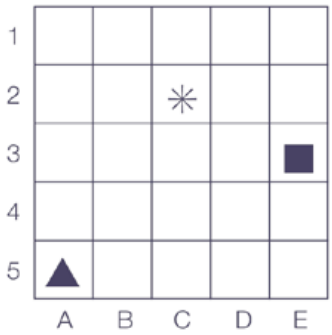
- UNIT NUMBER -
SIX

Finding your way around maps and atlases

This unit covers:
- ✓ grid references
- ✓ finding your way around an atlas
- ✓ using an index to find places.

Most maps include a grid of lines that is there to help you to find places on maps quickly. In the *Oxford Primary Atlas for South Africa*, these are alpha-numeric grids. Show learners the example of the map of South Africa with an alphanumeric grid on pages 18 and 19 of this guide, which have been extracted from the *Oxford Primary Atlas for South Africa*. At higher intermediate and senior levels, learners will work with the grid of lines that longitude and latitude make up.

Grid references



The diagram on the left has been divided into columns (running from top to bottom) and rows (running from left to right). The lines on the diagram form a grid. Each line on the grid has been given a letter or number to identify it. By referring to the numbers and letters on the grid, we can pinpoint blocks on the grid. For example, A5 refers to the block with the black triangle in it.

A5 gives us the position of a certain square on the grid. We call this an alpha-numeric grid reference because it contains a letter of the alphabet and a number. Grid references like this one can be used to give the exact or rough position of places on maps.

Latitude and longitude

The curriculum does not require junior learners to learn about latitude and longitude, but because many of the maps that they will see elsewhere are marked with lines of longitude and latitude, you may want to give them a simple introduction. The key points are:

- lines of latitude and longitude are imaginary lines that form a grid on the Earth
- lines from north to south are lines of longitude
- lines from west to east are lines of latitude
- the equator is a line of latitude that divides the Earth into two hemispheres: the northern hemisphere and the southern hemisphere.

Once learners understand that lines of latitude and longitude form an imaginary grid on the Earth's surface, they can begin to understand how these lines are used to give the position of places on a map.

Using an index to find places

An index is an alphabetical list of all the places in the atlas. In order to use it effectively, learners should understand alphabetical order. This skill also helps them to use dictionaries and other alphabetically arranged reference works.

The last pages in atlases contain the index. It gives you information about the places on the maps, and also tells you where to find them. You will find:

- the place name
- the country (if relevant)
- a description of the place, e.g. town, country, dam. In some cases they are abbreviated, e.g. mt. stands for mountain
- a page number
- an alpha-numeric grid reference.

If a learner is trying to find Caledon (for example) on a map in the atlas, these are the steps to follow:

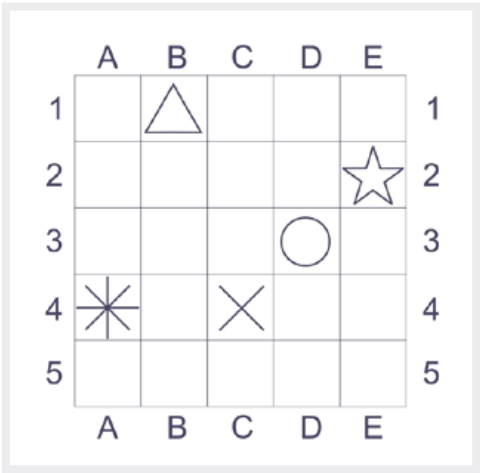
1. Find Caledon in the index.
2. Write down the page number and grid reference given there.
3. Turn to this page in the atlas and find the block in the grid.
4. Find Caledon in the block.

Some towns can be found in several different maps in the atlas, but in most cases the index only lists the most important map for that town.

Remember that the way some maps are drawn means that the lines of latitude and longitude may be curved. In this case, the grid does not form uniform square blocks. Turn to this page in the atlas and you can still use the same method to find places on a grid like this.

Activity

1. Draw the grid below on the chalkboard. Ask learners to say what position the following shapes are in:
   - the triangle
   - the circle
   - the X
   - the star
   - the *



If they still need practice, leave the grid on the board but rub out the shapes and ask individual learners to come up and colour in the blocks that you specify (e.g. 'Colour block A3 red'). If you don't have coloured chalk, get them to write their initials in the blocks you specify.

Find the answers to this activity, plus additional activities, in the *Oxford Primary Atlas for South Africa Teacher's Resource Book*, available to download from www.oxford.co.za.

TEACHING RESOURCE

- UNIT NUMBER -
SEVEN

Scale and distance

This unit covers:
- ✓ understanding scale
- ✓ representing scale
- ✓ measuring and calculating distance.

Understanding scale

Maps are scale representations of the real world. This means that they are much smaller than the real areas that they show. The scale of a map tells you how much smaller the map is than the real area. It also gives you the information you need to calculate how long the distances shown on the map actually are on the ground.

Representing scale

Scale on maps can be given in three ways:
1. as a line scale
2. as a statement in words
3. as a ratio.

Line scales

In the *Oxford Primary Atlas for South Africa*, scale is shown as a simple line scale, supported by a clear statement in words, for example:

One centimetre (cm) on the map represents 50 kilometres (km) on the ground.

Scale

Scale as a ratio

Primary learners are not usually required to work with scale as a ratio. This is simply included for teachers' information, as learners are likely to come across maps that show scale in this way.

Many maps give scale as a ratio, for example:
1:2 000

A ratio of 1:2 000 means that the map is $\frac{1}{2000\text{th}}$ of the size of the real area. In other words, one unit of measurement on the map is equal to 2 000 of the same units on the ground. So, 1 cm on the map would represent 2 000 cm (that is, 20 metres) on the ground.

Large scale and small scale

A large-scale map usually shows a small area in generous detail. So, on a large-scale map of Durban, for example, you would see streets, parks, etc.

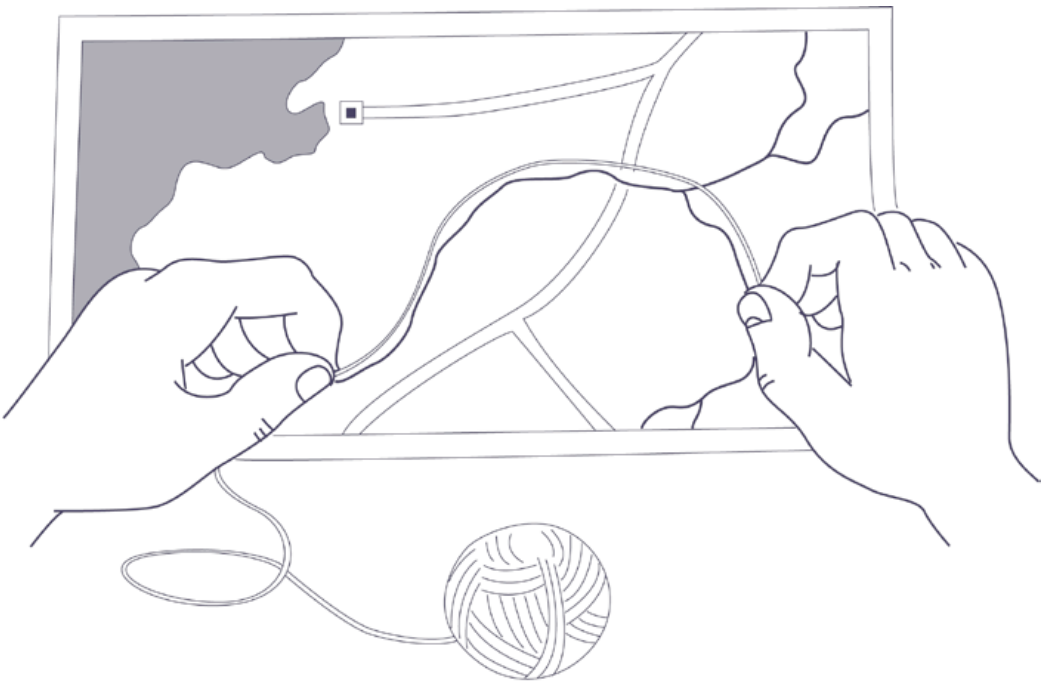
A small-scale map shows a much larger area and it has to leave out many details. Therefore, on a small-scale map of South Africa, Durban would be shown as a dot.

Measuring and calculating distance

Learners can measure straight or curved distances on maps using a ruler, paper, string or a pair of dividers.

A ruler or a straight edge of paper can be used to measure straight line distances on a map. Once learners have measured, they place the ruler against the line scale on the map and read off the real distance.

Roads and rivers on maps are usually curved. The best way to measure curved distance on a map is to use a thin piece of cotton or string to follow the distance being measured. The distance can then be worked out by placing the string against the line scale.



Using a piece of string to measure a curved distance.

Activities

1. You can use any map to set measuring tasks. Ask learners to measure distances between places on the map and then to convert these to kilometres using the scale.

2. Compare the maps of South African provinces.
   a. Which province is drawn at the largest scale?
   b. Why do you think this province has been drawn at a larger scale?

3. Turn to the map of Africa on page 20 of this guide, which has been extracted from the *Oxford Primary Atlas for South Africa*.
   a. A yacht-owner is planning to sail all the way around the coast of Africa. She will start at Alexandria in Egypt, and travel via Cape Town, stopping at ports on the way and ending up back at Alexandria. Approximately how long will the journey be? Calculate it in kilometres.
   b. Find the equator. Measure along it from the west coast to the east coast of Africa. Calculate how far this distance is in kilometres.

4. Turn to the map of South Africa on pages 18 and 19 of this guide, which have been extracted from the *Oxford Primary Atlas for South Africa*. Work with a partner.
   a. Find East London and Johannesburg. How far do you estimate that it is from East London to Johannesburg by road? (Take a guess.)
   b. Now measure the distance by road with string and a ruler. What is the map distance in centimetres? What is the real distance in kilometres?
   c. If you fly in a direct line from East London to Johannesburg, what is the distance?

5. Look at the map of South Africa on pages 18 and 19 of this guide, which have been extracted from the *Oxford Primary Atlas for South Africa*.
   a. A pilot needs to know the flight distances between the cities below. Copy the table into your book and fill in the distances.
   b. Add three flight routes of your own. Remember to check that the towns you choose have airports.

Find the answers to these activities, plus additional activities, in the *Oxford Primary Atlas for South Africa Teacher's Resource Book*, available to download from www.oxford.co.za.
TEACHING RESOURCE

Flight route (direct)	Distance on map (cm)	Distance in km
1 Cape Town to Johannesburg		
2 Johannesburg to Durban		
3 Johannesburg to Polokwane		
4 Mthatha to East London		
5 East London to Cape Town		
6		
7		
8		

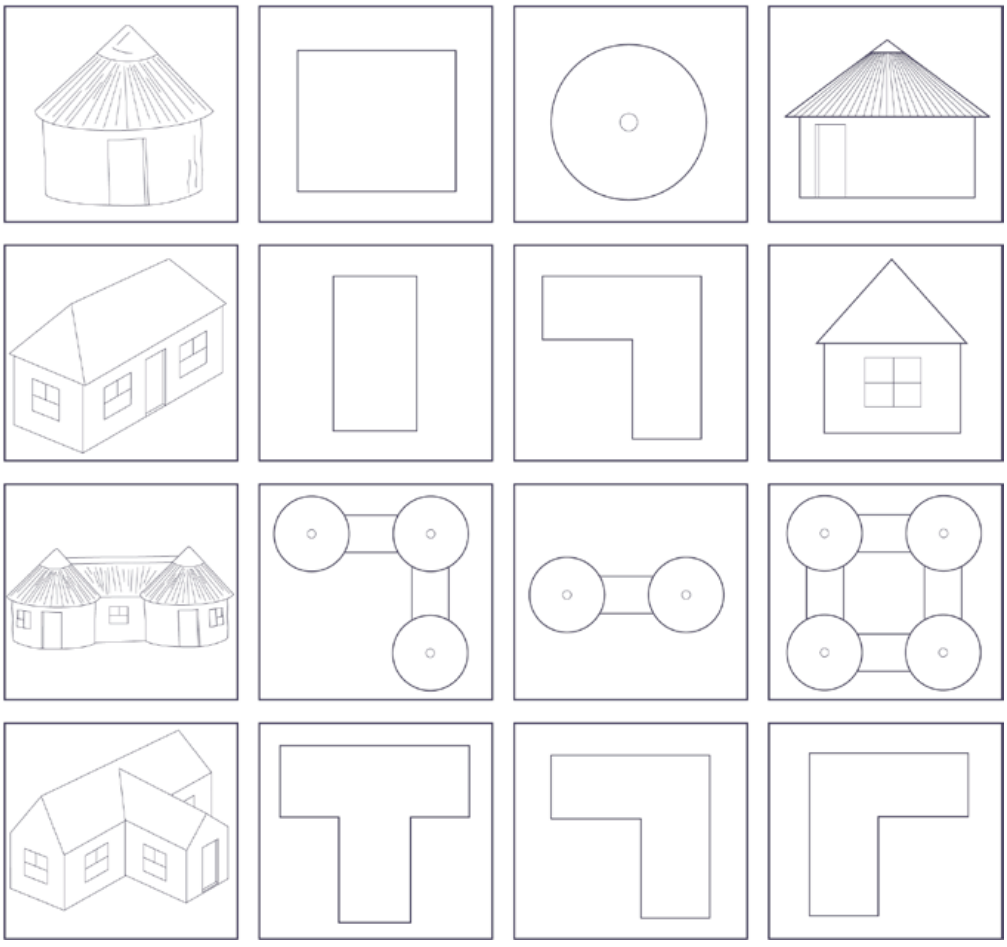
- UNIT NUMBER -
EIGHT

Photocopiable worksheets

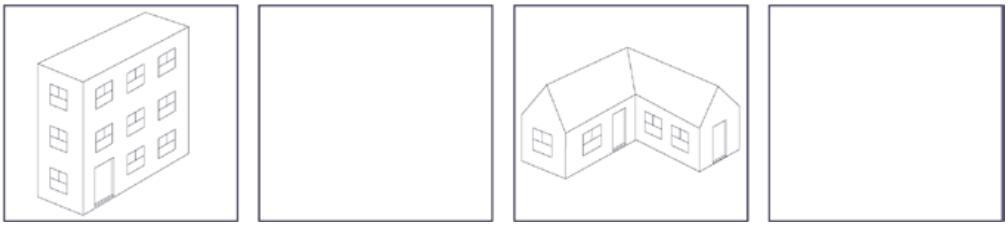
Map skills: plan views

Looking down at buildings

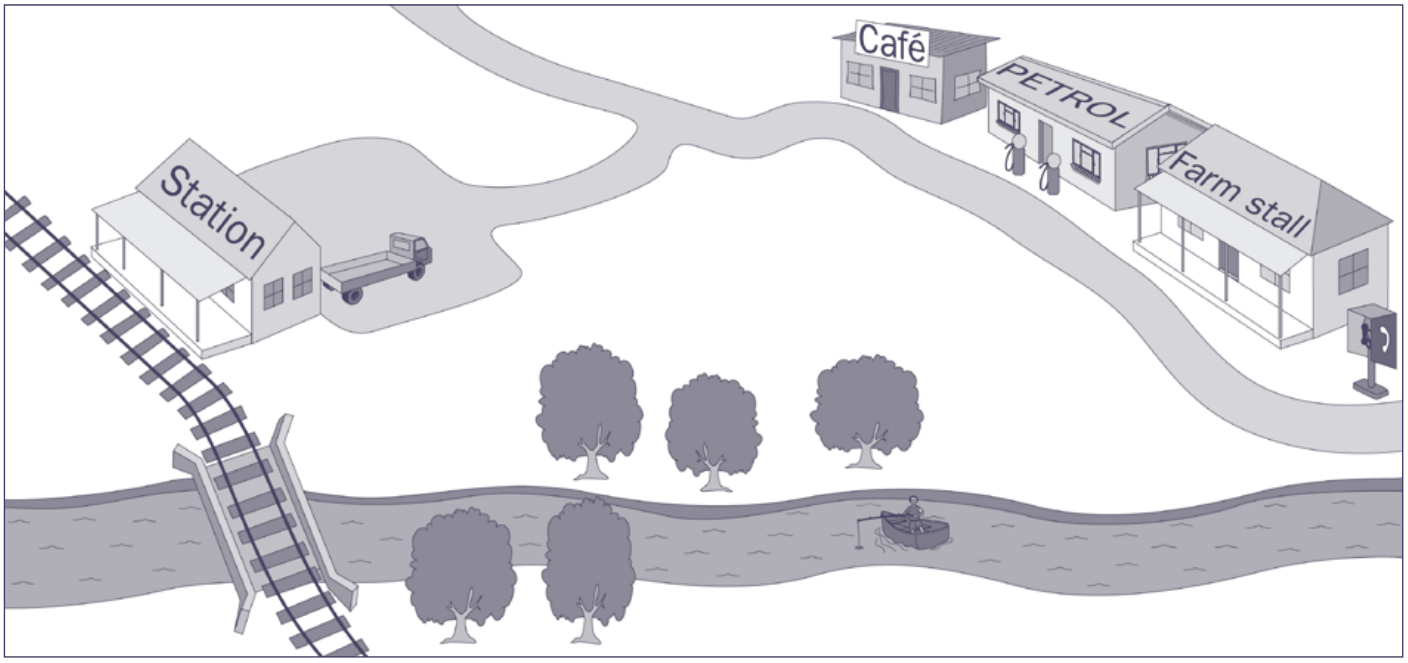
A view from above is called a plan view.
Colour the roof of each building in the left column. Then colour each building's plan view.



Draw the plan view of each of these buildings.



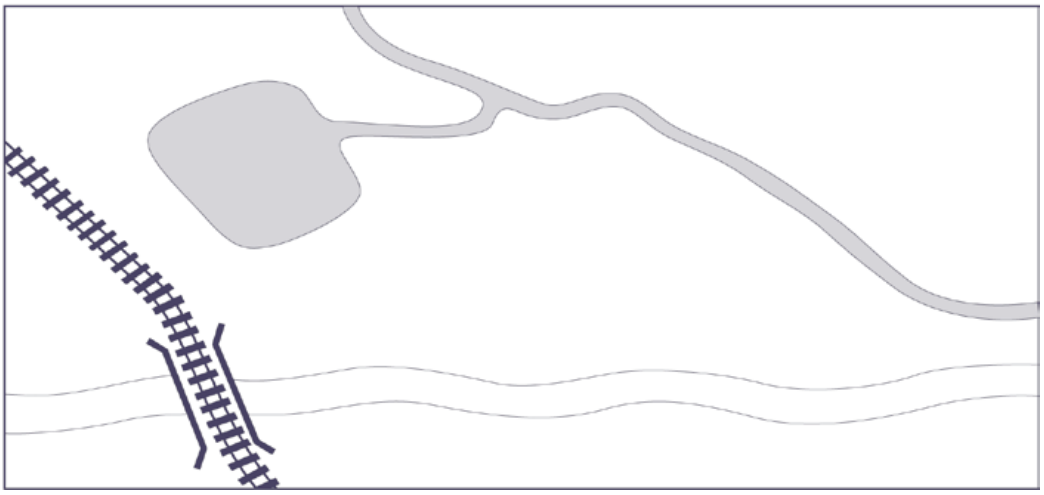
Map skills: map symbols



Design and draw the missing symbols in the key. Using the key, complete the map.

Key

road		river		train station		phone	
petrol station		bridge		parking area		café	



My province in South Africa

Use the map of your province (this can be found on pages 33 to 41 of the *Oxford Primary Atlas for South Africa*) together with the map of South Africa on pages 18 and 19 of this guide, and the table at the bottom of your province's map, to complete this worksheet.

Find your province on the map of South Africa below, and colour it in. Write its name in the space below the map.

Mark the capital and label it. Colour the sea blue.

My province: _____

- Population of province: _____
- Area in km^2: _____
- Towns or cities with airport: _____
- Neighbouring provinces: _____
- Three main home languages (list them in order, starting with the language with the most speakers): _____
- Neighbouring provinces: _____

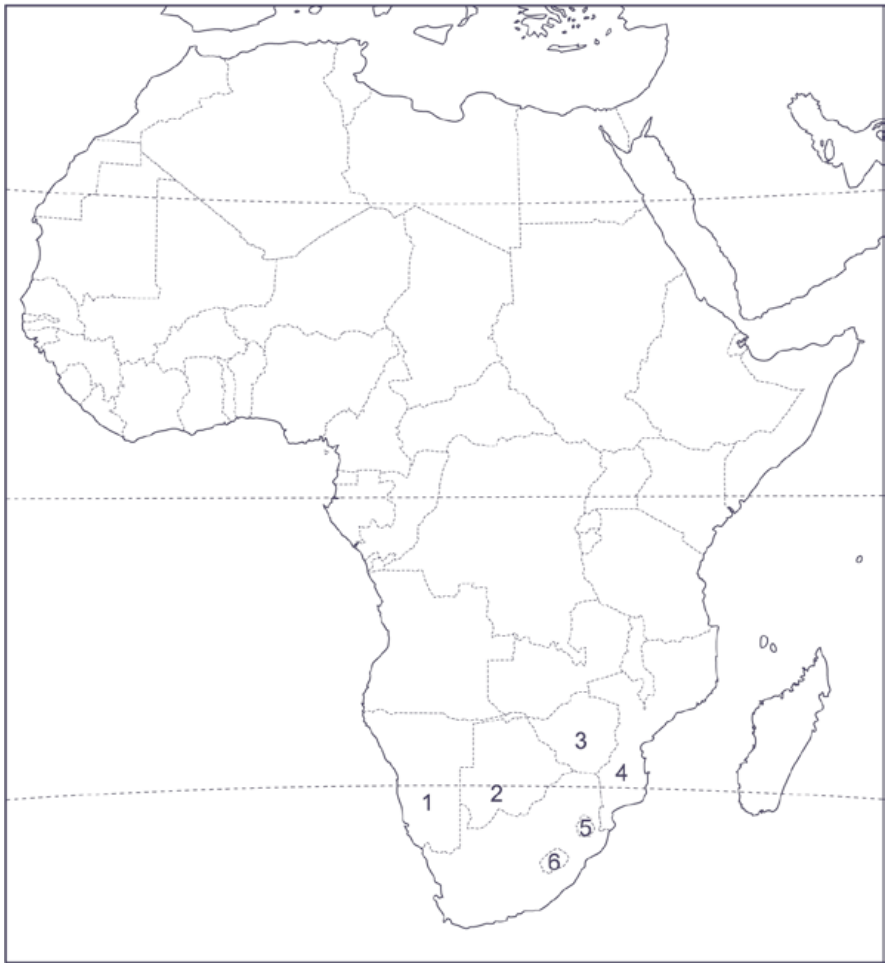
Physical features

- Main rivers: _____
- Mountain ranges: _____
- Main nature reserves or national parks (name three): _____

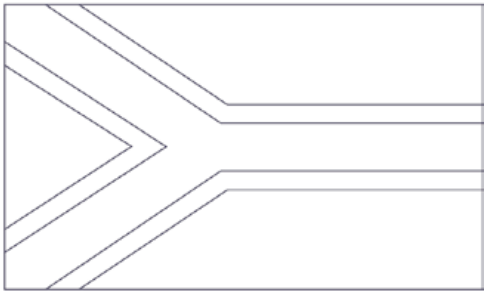
South Africa

Use the physical and political maps of South Africa on pages 13 and 18–19 of this guide respectively to complete this worksheet.

- Find South Africa on this map of Africa.
- Colour in South Africa. (Remember to leave Lesotho clear.)
- Label it.
- Mark and label the two capital cities.
- Colour the sea and label the two oceans.



Colour the flag using the correct colours.



Basic facts

South Africa's population: _____

Physical features

Area: _____

Highest point: _____

Longest river: _____

Windiest place: _____

Driest place: _____

Wettest place: _____

Provinces (use the provincial maps on page 33 to 41 of the *Oxford Primary Atlas* to complete this table)

Province	Capital	Population	Main home language

National symbols

National flower: _____

National animal: _____

National tree: _____

National fish: _____

National bird: _____

Neighbouring countries

Name our six neighbouring countries and their capitals.

1. _____/_____

2. _____/_____

3. _____/_____

4. _____/_____

5. _____/_____

6. _____/_____

Imagine that you have been asked to choose a national insect. Draw it and name it.

South Africa's provinces

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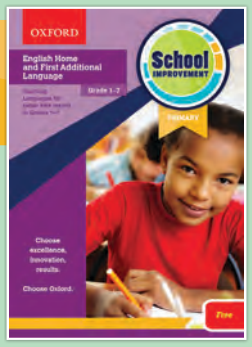
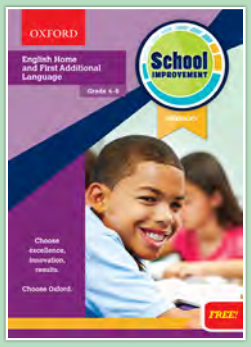
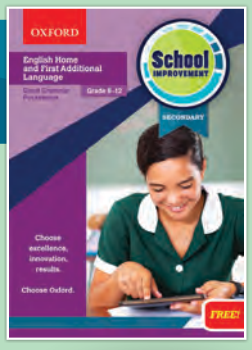
PRIMARY





SECONDARY



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