

GEOGRAPHY

SENIOR ONE TEACHER'S GUIDE

Chapter One

Introduction to Geography

Overview

In this topic, focus learners to understand the meaning of geography, including its branches and the value of studying it. Learners should be encouraged to visit the local area to get firsthand information about their environment, how the lives of people are affected by the environment, how the activities of people affect the environment and how to conserve the environment.

You are advised to use a number of interactive methods to enable learners to develop the skills listed under each activity. Ensure that all learners participate in class and group discussions. ICT has been integrated, where possible; make use of it to make the learning process interactive and interesting.

In this topic, the learner should be able to:

- a. use fieldwork to observe, name and classify human and physical features.
- b. know the meaning of geography and environment.
- c. understand that the environment is all the things around us.
- d. realise that geography is the study of the relationship between people and their environment.
- e. appreciate that the study of geography helps us to understand how our lives are affected by the environment and how we can preserve the environment so it remains useful to us.
- f. appreciate that caring for and preserving resources in the local environment, community and country are signs of love for one's country.

What is geography?

Activity 1.1

In groups, go outside the classroom and do the following:

- i) Observe and draw a sketch diagram of the area and on it name all the things you can see.
- ii) Draw a table to divide the things you have written into natural things and those made by people.
- iii) Discuss the way you have classified the things in the table and make some changes where necessary.
- iv) As a class, display the field diagram you have drawn, the names of features in the area and the table you have made. Comment on each group's work and ask each other questions.
- v) Share your views on what you understand by environment.

Activity 1.1

Resources to use: The local environment outside the classroom and recording tools.

Skills: Observation, recording information, analysing, interactive skill, reporting and critical thinking.

- i) Lead learners outside and guide them to do Activity 1.1, on page 2 of the Learner's Book.
- ii) Observe learners as they do the activity and assist them where they get challenges.
- iii) In conversation, ask learners to explain their classification, on the table, of things in the environment as natural and human.
- iv) Emphasise that each group comes up with a write-up about the area of study.

- v) Observe learners in groups as they discuss and amend their work to ensure that interactive skills and critical thinking are developed.
- vi) Lead learners in a discussion to share their field sketches, findings and what they understand by environment as class.
- vii) Wrap up the activity by pointing out that in geography we study about human beings and their environment.

Hint: Emphasise that the environment is all the things around us, both natural and those made by people. Also emphasise that, plants such as trees, and water bodies such as lakes, can be natural or human depending on how they have come to be where they are.

Possible responses

You are expected to encourage learners to give their different views in support of their ideas as a way of developing skills, e.g. communication, critical thinking and social interpersonal skills.

1. Field sketches will depend on the area where the school is found; should have both physical and built features. The features may include trees, buildings, roads, farms, a compound, a playground, grass, hills, bush, stream, water spring etc.
2. Table showing natural things and things made by people in the local area

Natural things	Things made by people
Trees	Trees
Grass	Buildings
Bush	Roads
Stream	Compound
Hill	Farms
	Water spring

3.
 - The environment is the natural things surrounding us.
 - Things that surround us.
 - Both the natural and human things surrounding human beings.

You have found out that the area around your school has both natural things and things made by people. In your classification, you have probably categorised trees, grass, soils, rocks and streams as natural things and buildings, roads, gardens, factories and playgrounds as things made by people. All these things are called our surroundings or **environment**. The natural things make up our **physical environment**. All things made by people make up the **human environment**. The human environment is also called the **built environment**.

Activity 1.2: Study Figure 1.1 and do the activities that follow

(a)





(b)

Figure 1.1: Photographs showing the geography of different areas

- i) Identify and write down in your notebook the natural and human features shown in each photograph.
- ii) Explain how the human activities carried out in each picture are related to the natural environment.
- iii) In what ways do you think human activities in each picture might affect the natural environment?

All that you have written about each picture in Figure 1.1 above is the geography of the area where the picture was taken. So when we study geography, we are interested in understanding how the environment affects our lives and how we affect the environment.

Activity 1.2

Resources to use: Pictures are already presented in the Learner's Book

Skills: Picture interpretation, analysing, critical thinking

- (i) Ask the learners to study the pictures in Figure 1.2, on pages 2-3 of the Learner's Book.
- (ii) Move around, observe learners as they do the activity, and assist them where they may get challenges.
- (iii) Ensure that everybody engages actively with the pictures. Let them consult one another.
- (iv) Randomly, select a few pairs and ask them to present what they have written to the whole class. Ask the rest to comment on each presentation.
- (v) In conversation, ask learners why they have classified features in the pictures the way they have done; probe learners to explain their points further and to support them with evidence/examples from the pictures provided.
- (vi) Wrap up the activity by pointing out that since photos are taken from the real world, then what they have written about each picture is the true geography of the area represented by the picture.

Hint: Discuss instances where photographs may not give us up-to-date geographical information.

Possible responses

1. Photo (a)

- Natural features: Flat land, gentle slope/foothill, blue sky with scanty clouds
- Human features: Combine harvester (tractor), truck (lorry)

Photo (b)

- Natural features: Flat land, sand beach, lake basin/lake, inlet/bay, trees, short vegetation
- Human features: Boats, houses, settlements, dock/pier

2. Photo (a)

- Farming/crop growing is due to the presence of extensive flat land
- Use of farm machinery is possible due to the flat nature of land

Photo (b)

- Water transport is possible due to the presence of a navigable water body
- Possibly the water body is rich in fish, which has led to fishing
- The houses are constructed on a gentle slope and away from the water body

1. Photo (a)

- Natural vegetation cut down/cleared to establish the farm
- The use of a tractor/harvester and heavy trucks which produce exhaust fumes possibly leads to pollution of air.

Photo (b)

- Removal of fish in large amounts depletes the lake
- Oil spills from outboard boat engines pollute water
- Disposal of wastes from settlements in water might also lead to pollution of the lake
- Destruction of vegetation on the lake shore to create landing space

Activity 1.3

- (i) In groups, search the internet or carry out a library research about what geography is.
- (ii) Write a brief definition and description and share these with other groups through a class discussion.
- (iii) After agreeing on the meaning of geography, make corrections in your work if necessary.

Activity 1.3

Resources to use: Computers, textbooks, writing materials

Skills: Information gathering, report writing, collaboration, communication

- I. Organise learners into convenient groups and guide them to do Activity 1.3 on page 3 of the Learner's Book.
- II. Observe groups and individuals as they discuss and write down their definition of geography on the chalkboard.
- III. Ensure that everybody is actively involved in the discussion.
- IV. Converse with them about what they have used to come up with the definition.
- V. Ask the rest of the class to comment on group presentations and guide them to correct any mistakes made.
- VI. Ensure that learners come up with original definitions of geography.
- VII. Wrap up the activity by pointing out that geography is concerned with studying the things that surround us, how they affect one another, how they affect our lives and how we also affect them.

Possible responses

- The study of natural things and human things around us.
- The study of the relationship between people and the things that surround them (environment).
- The study of the earth and how man interacts with it.
- Etc.

Branches of geography

You have already learnt that in geography we study the natural and human environments and how these affect our lives. So geography has two branches, namely physical geography and human geography.

Activity 1.4

In groups, study the list below showing things in our environment. Fill in the table to show which branch of geography studies each of these things.

Things in our environment	Physical geography	Human geography

In this activity, you have realised that each branch of geography deals with a different environment. Physical geography deals with the natural environment while human geography studies the built environment. Think of other things which may be studied in human geography. Make a list and share it with your classmates.

Activity 1.4

Resources to use: An elaborate list of things in the environment already provided in the Learner's Book

Skills: Analysing, comparison, forming own opinions

- Guide learners to individually do Activity 1.4 on page 4 of the Learner's Book.
- Observe learners as they do the activity and ensure that everyone actively participates. Encourage them to ask one another.
- Ensure that everyone comes up with a fully filled in table.
- In conversation, ask learners to explain why they have put each thing in the column where they have placed it. Observe how they defend their views.
- Wrap up the activity by pointing out that physical geography studies only natural things while human geography studies things made by people.

Hint: Point out instances where vegetation may be studied under human geography.

Possible responses

Physical geography	Human geography
Weather and climate	Towns and cities
Rivers and lakes	Roads
Rocks	Railways
Hills and mountains	Farms
Soils	Fishing
Vegetation	Mining
	Factories

The value of studying geography

Activity 1.5

In groups:

- (i) Discuss how studying geography may benefit you, your community and country.
- (ii) Write down the benefits in your notebooks.
- (iii) Through discussion, share what you have written with other groups.

Studying geography has several benefits. These include helping us make wise use of our environment and conserving it for the future. It gives practical skills in making and using maps, collecting and presenting information about our surroundings; and creates awareness about other parts of the world. This makes it possible to exchange resources through trade. Geography also helps us to develop values such as teamwork and respect for people doing work using their own hands. You will find out more about the value of the subject as you study it.

Activity 1.5

The value of studying geography

Tools: No specific tools needed

Skills: Interpersonal skills, critical thinking, teamwork, forming own opinions

- i. Organise learners into discussion groups depending on the number in class, allow each group to elect a chairman and secretary; then introduce the topic.
- ii. Observe learners as they discuss in their groups and see how well they relate with one another. Ensure that everybody takes an active part.
- iii. Call upon groups to present their ideas. Summarise their views on the chalkboard and correct any mistakes made.
- iv. Call upon the class to critique group presentations.
- v. In conversation, encourage learners to explain and defend their views.
- vi. Mark learners' work and provide feedback and guidance.
- vii. Wrap up the discussion by summarising the benefits of studying geography.

Hint: Ensure the development of the skills listed above.

Possible responses

Responses will vary from group to group. Benefits may include:

- Helps us to know our environment and how to conserve it.
- Introduces us to different parts of the world, including places we have never been to.
- Helps us to understand local weather and climate so that we can plan our activities accordingly.
- Gives practical skills needed in our day-to-day life, e.g. reading and using maps, collecting, analysing and presenting information.
- Enables us to understand the resources in our environment and how we can use these for development.
- Creates a foundation for future careers, e.g. professional geographers, meteorologists, cartographers (map makers), environmentalists, surveyors, pilots, urban and land use planners etc.

How we use our environment

You are probably aware that most of the things we do in the places where we live depend mainly on the environment we live in. You are going to understand this better as you end this topic.

Activity 1.6

- Identify and make a list of the ways you and your family use the environment around your home.
- How do the activities you carry out affect the local environment?
- Think of any other place you know or you have read about where people use the environment in ways which are different from those in which you use it. What kind of environment is in that place, and how is it different from the one where you live?
- Share what you have written with the rest of the class.
- Write a plan for caring for and conserving the natural environment in your home area so that it remains useful to you and people who will live there in future.
- Through discussion, share your action plan with the rest of the class so that you comment on each other's views.

Activity 1.6

Resources to use: No specific resources needed

Skills: Analysing, comparison, creative thinking, forming own opinions

Values: Conserving the environment

- Guide learners to individually do Activity 1.6 on page 5 of the Learner's Book.
- Observe learners as they do the activity and ensure that everyone does the task.
- Ensure that everyone comes up with a write-up based on their home area.
- Write their ideas on the chalkboard as they share in a whole class presentation.
- In conversation, ask learners to explain their views in detail. Observe how they defend their views.
- Assess each learner's action plan and give immediate feedback.
- Wrap up the activity by pointing out that our own activities can affect our environment negatively and emphasise the need and responsibility to conserve it.

Possible responses

These will depend on the learner's home area and the area chosen for comparison.

Activity of Integration

Imagine your friend has completed high school. Among the subjects he/she has studied is geography. He/she needs your advice on the occupations he/she can engage in. Write a letter advising him/her on how he/she can use the knowledge and skills learnt in geography to earn a living.

Tools to use: No specific tools

Skills: Critical thinking, creative thinking, problem solving

This task is aimed at assessing the extent to which the learner has grasped the concept of geography and the relevance of studying it to his/her own life and community. Encourage learners to come up with original views based on their own locality and imagination.

- (i) Ask learners to do the task at the end of Chapter One in the Learner's Book individually. Give a time frame to ensure timely application of the acquired knowledge.
- (ii) Ensure that every learner produces written responses to the task.
- (iii) Mark their work and give feedback and guidance where needed.

Possible responses

Personal views depending on the locality, resources present, nature of the community, level of development and economic activities people engage in.

Evaluation grid for the integration activity

Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5
Correct use of subject resources	Correct interpretation of task	Coherence of response	Accuracy of information	Excellence
The learner gives a correct interpretation of the situation	The learner applies knowledge about the local environment and how human activities are related to that environment	The learner gives ideas about the situation logically	The learner relates jobs and occupations to the local area in the given situation	The learner uses original ideas
x/3	x/2	x/8	x/5	x/2
The learner will be considered to have achieved the competence if s/he attains 2/3 of the total marks available (or of the assessment criteria).				

Chapter Two: Showing the Local Area on a Map

Overview

The concept of a map is not new in the minds of the learners. In this topic, focus learners to practise and understand how we generate maps and the qualities of a good and effective map. The learner will understand this best by using knowledge of the local area, including the school's immediate environment.

In this topic guide learners to:

- know what a map is and how this can be used to show places.
- understand that a map can tell us about places we have never seen.
- understand that maps shrink or reduce the real sizes of things to fit them on paper.
- realise that different kinds of maps can show areas of different sizes: local maps, wall maps, atlases and globes.
- draw a map of a local area.
- follow a map to get to the school or other places in the local area.
- appreciate that maps can help us move around an area and give us information about an area we have never visited.

What is a map?

Think of the route you always follow as you travel from your home to the market or place of worship. Do you always use a map? Every day we use maps to move to different places. These maps are not always drawn but exist in our minds. They are called **mental maps**. There are also maps drawn on flat surfaces such as paper. These represent part of the earth or the whole earth. In Topic 3, you will learn that reading and using maps is one of the ways in which we can find out information about the earth.

Activity 2.1: Understanding what a map is

Study Figure 2.1 and do the activity that follows.

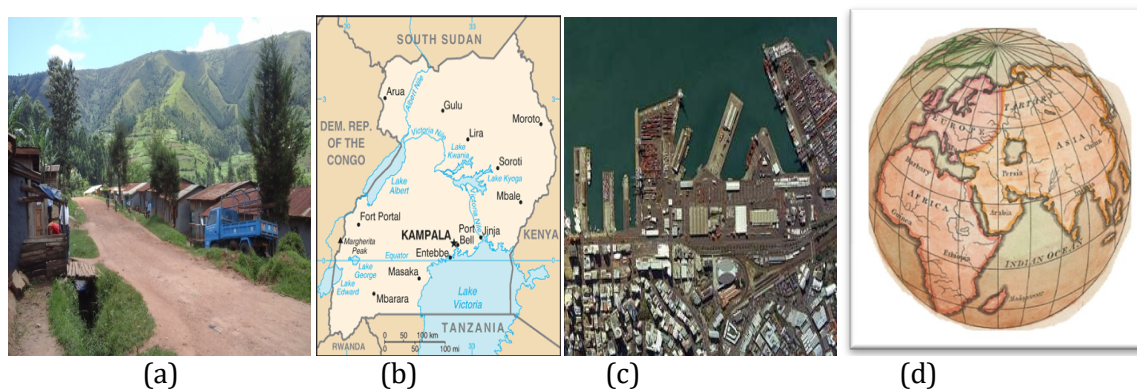


Figure 2.1: Maps and photographs

- Decide which of the above drawings maps are. Give reasons to support your views.

- (ii) Which ones are photographs? Give reasons to support your views.
- (iii) What kind of features can be shown on maps?
- (iv) How can a photograph be useful when constructing a map of an area?
- (v) Write at least one sentence explaining what a map is and share it with the rest of the class.

Activity 2.1

Resources to use: Maps and photographs already presented in the Learner's Book

Skills: Observation, analysing drawings, finding out information

Ask the learners to do Activity 2.1 on page 7 of the Learner's Book.

- i. Observe learners as they do the activity and assist them where they get challenges.
- ii. In conversation, ask learners to explain why they have categorised the drawings the way they have done.
- iii. Call upon some learners at random to share what they have written with the class.
- iv. Challenge the rest of the class to comment on the views presented by the selected learners.
- v. Lead learners in a discussion to share their comments as a class and to explain what a map is in their own words.
- vi. Wrap up the activity by pointing out that on a map all features are reduced in size, drawn in plan, and represented using symbols.

Possible answers

- 1. (b) and (d) are maps. This is because the features shown on these drawings are drawn in plan but not as actual objects; /they show only a few selected features in the areas they represent.
- 2. (a) and (c) are photographs. This is because the features are shown as actual objects; / they show all features in the areas they represent.
- 3. Features which are fixed in specific places on earth; mobile objects like vehicles cannot be represented on maps.
- 4. Photographs show the positions of features in an area and can be changed into maps by drawing such features in plan/as seen by the observer directly from the air.
- 5. The explanation may vary but should point out the idea: a representation of the earth or part of the earth with features drawn in plan or as seen directly from the air.

A map is a special kind of drawing of the earth's surface. It can show the whole world or part of it. Again, you have learnt that we represent features on a map by means of outlines but not as pictures. The features on the ground are drawn in **plan** as if the observer is seeing them directly from the air.

On a map real features and places are represented using **symbols**. These may include signs, colours, shades and abbreviations. How do features appear on a photograph? The place on the map where all symbols are explained is called a **key**. You are going to learn more about these later in this topic.

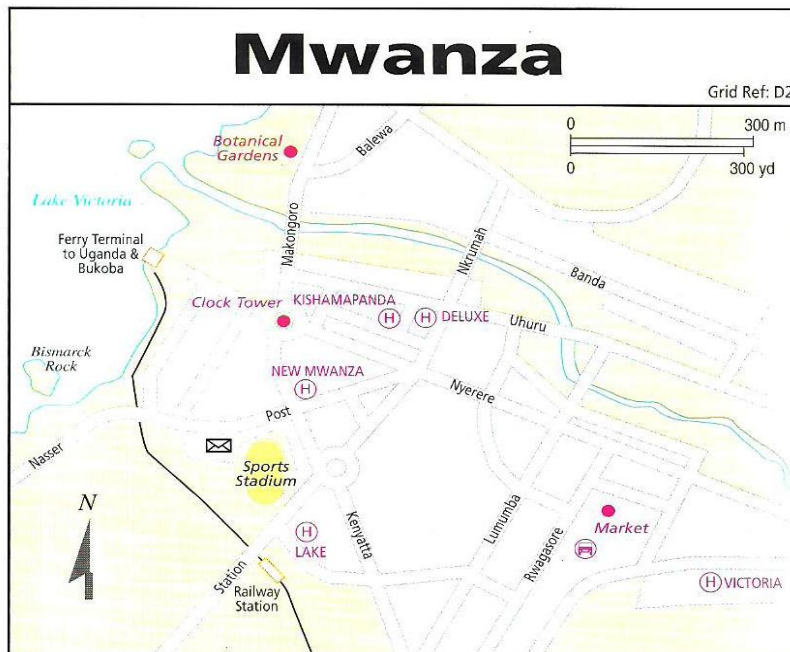


Figure 2.2: Map of Mwanza Town-Port

Activity 2.2: Representing features on a map

Look at Figure 2.2 above and do the following:

- Identify the symbols used to represent the hotels, botanical garden, market, stadium, railway line, lake, rocky island and ferry terminal.
- In your notebook, construct a key for the map.

Activity 2.2

Resources to use: Map already presented in the Learner's Book

Skills: Observation, finding out information, interpreting a map

- Ask the learners to do Activity 2.2 on page 8 of the Learner's Book.
- Observe learners as they do the activity and assist them where they get challenges.
- In conversation, ask learners to explain how they have arrived at the symbols they have identified.
- Mark the learners' work and give immediate feedback.

Possible answers

- Hotels – encircled letter H; botanical garden – violet colour; market – light purple/violet colour; stadium – yellow colour; railway line – solid black line; lake – light blue/water – blue colour; rocky island – solid land encircled with light blue line; and ferry terminal – black square.
- The key should consist of the labelled drawings of the symbols listed in (1) above.

Mapping a local area

You now know what a map is and how physical and built features can be shown on a map. Every time you move to a different place there are certain important features which you see along the way. These assist you in tracing the place you are going to. Think of those features and make a list of them. The features you have listed are called **landmarks**.

Activity 2.3: Drawing a map of a small area

- (i) Draw a map to show a visitor to your area how to get to your school.
- (ii) Exchange your map with your neighbour.
- (iii) Discuss and comment on each other's maps.
- (iv) Share your comments with the rest of the class.

When we draw a map of an area such as a village, town or a school, we put only the most important features in the area. These enable us to follow routes in the area and to find where certain things are located.

Activity 2.3

Resources to use: No special tools needed; knowledge of representing features on a map

Skills: Map drawing, interpreting a map and using a map, analysing information.

- i. Organise the learners into pairs and ask them to do Activity 2.3 on page 8 of the Learner's Book.
- ii. Observe the learners as they do the activity and assist them where they get challenges.
- iii. Ensure that pairs exchange maps and comment on each other's maps.
- iv. In conversation, ask how they can represent the features in their area on a map.
- v. Guide learners in a discussion to share comments on each other's maps; and correct the mistakes made, if any.
- vi. Wrap up by pointing out that on a route map we put major features that other people can use to follow the route (map).

Possible answers

1. Maps drawn will vary depending on the area in which the school is found.
2. Comments will depend on individual maps; but should point out how well the symbols used represent the real features in the area mapped.

Qualities of a good map

Not every map drawn can be used to find our way about or to describe an area. When we draw maps we take great care to ensure that other people can read, interpret and use our maps. Such maps are called good maps.

Activity 2.4: Identifying qualities of a map

- (i) In pairs, draw a map showing the route from your school to home that included the physical and human features along the way.
- (ii) Swap the maps so that each can find out where the other lives.
- (iii) Can you follow that map and reach your friend's home?
- (iv) What things on the map can help you to reach there?
- (v) Ask your friend to describe the things on your map that can help him/her to follow the map up to your home.

For us to be able to use maps to move around places or to guide other people to places they have never been to, or to describe an area, the map should have certain features that assist us in doing so. In the discussion with your friend, you may have probably pointed out that you could follow a map to reach each other's home using a map title, key and a **compass rose** or direction finder. These are called qualities of a good map.

Activity 2.4

Resources to use: No special tools needed; knowledge of the local area

Skills: Observation, analysing, map drawing, map reading

- i. Organise learners into pairs and ask them to do Activity 2.2 on page 9 of the Learner's Book.
- ii. Observe learners as they do the activity and assist where they get challenges.
- iii. In conversation, ask learners to explain the major landmarks (features) each will look for as they follow the map to each other's home.
- iv. Wrap up the activity by emphasising the features that make a map a good source of geographical information and guiding tool when we are using it.

Hint: Ensure that learners come up with maps basing on their knowledge of the local area, and also develop the required skills.

Possible answers

1. The maps drawn will vary depending on which direction from the school the learner lives.
2. Subjective(Yes/No)
3. Map title, direction finder or compass rose, key interpreting symbols.
4. Map title, direction finder or compass rose, key interpreting symbols.

Activity of Integration

Using the knowledge you have got from this topic, write an article of not more than one page for an education column in a local newspaper, explaining how one can produce a map of their home area and how they can use it to understand the local geography of the area.

Tools to use: No specific tools

Skills: Critical thinking, creative thinking, problem solving

This task is aimed at assessing the extent to which the learner has grasped the skill of mapping a local area and using the map to find out about the area. Encourage learners to come up with original ideas based on the process of producing a map, qualities of a good map and their own imagination.

- (i) Ask learners to do the task at the end of Chapter Two in the Learner's Book individually. Give a time frame to ensure timely application of the knowledge learnt and skills acquired.
- (ii) Ensure that every learner produces written responses to the task.
- (iii) Mark the learners' work and give feedback and guidance where needed.

Possible responses

Explanation of how one can represent three-dimensional features on a flat piece of paper; using different symbols; and the qualities the map should have so that other people can read and

understand it. Also, how the map can be used to move around, interpret and record the geographical features in the area.

Evaluation grid for the integration activity

Criterion 1	Criterion 2	Criterion 3	Criterion 4
Correct use of subject resources	Correct interpretation of task	Coherence of response	Accuracy of information
The learner gives a correct interpretation of the situation	The learner applies knowledge about representing features in the local area on a map	The learner gives ideas about the situation logically	The learner relates the map to be drawn to the local area in the given situation
x/3	x/2	x/5	x/5

NB:

The learner will be considered to have achieved the competence if s/he attains 2/3 of the total marks available (or of the assessment criteria).

Chapter Three: Maps and Their Use

Overview

In this topic, focus learners to understand the different ways in which they can use maps in their day-to-day lives and in the world of work, including finding out geographical information, travelling from one place to another, land use planning and the development of regions, and the conservation of resources.

In this chapter, guide learners to:

- use and interpret symbols and identify features on a map using a key.
- identify directions on a map, using basic compass points.
- follow routes using a map.
- draw a map using a simple scale and using scale on a map.
- use letter and number co-ordinates or bearings and directions to locate places on a map.
- locate places on an atlas map using latitude and longitude and describe the places from information on the map.

- g. understand the difference between a map and a photograph.
- h. understand that there are many types of maps on different scales.
- i. use a linear scale and representative fraction.

Map scale

In order to represent features and places on a map, we reduce their actual size by a certain amount. To understand this, let us see how scale is used in pictures or photographs.

Activity 3.1: Understanding scale

Fig.3.1: Joel, Source for a photograph of a black male person



Figure 3.1: A picture of Joel

Look at the picture of Joel in Figure 3.1 and do the following:

- (i) Measure the length of his arm and leg in centimetres.
- (ii) Measure his height in centimetres.
- (iii) Do you think that is the real size and height of Joel?
- (iv) If it is not, explain what has happened to Joel's real size.

Activity 3.1

Resources to use: Measuring tool calibrated in centimetres

Skills: Observation, measuring, critical thinking

- i. Guide learners to do Activity 3.1 on page 11 of the Learner's Book.
- ii. Observe learners as they do the activity and assist where they get challenges.
- iii. In conversation, ask learners to imagine the real size of Joel and explain why he looks much smaller and shorter in the photograph.
- iv. In conversation still, lead learners to find out the different types of scale.
- v. Wrap up the activity by pointing out that without using a scale we cannot fit real objects on a map; and that for a map to be a true representation of real features on earth, all features have to be reduced by the same amount.

Hint: Ensure the acquisition and development of the skills listed above. Use the ideas got from the photograph to guide learners to understand the concept of a scale.

Possible answers

1. Arms = 2 cm.
2. Legs, approximately 2.5 cm.
3. Height, approximately 5 cm
4. No
5. Real size reduced in order to fit on a small paper/in small space.

When a photograph is taken, the size of the object is reduced, just as you have seen in the case of Joel above. In reality, Joel is much bigger and taller than his picture. He is about 150 cm tall. In the photograph he is only 5 cm. This means that 1 cm on the photograph stands for 30 cm on the real person. The photograph is five times smaller than his real size. That is to say, every part of Joel's body was reduced 30 times to fit in the photograph. Therefore, the scale of the photograph is 1:30 (1 cm to 30 cm.)

In the same way, when you look at a map of any place you realise that the features and place represented are much smaller than their actual size. In order to fit real features on a map, we reduce their size by a certain amount. The number of times a real feature is reduced in order to fit on paper is called a **scale**.

Types of scale

Map scale can be expressed in different ways. Such different ways of expressing the scale are called **types of scale**. Whichever way it is stated the scale can assist you in using the map. In Activity 3.1 above, you have learnt that the scale used to fit Joel in the photograph is 1:30. This means that every part of Joel on the photograph is $\frac{1}{30}$ its real length and size. This is called the **representative fraction scale**. You will find this scale on many maps you are going to use in this chapter. It tells you how much the area shown on the map has been reduced. Thus you can use it to find out how big the place on the map is on the real ground.

(Fig.3.2) Source for a sketch map of a 1:50,000 topographical survey map from East Africa with a key showing conventional symbols. The same map should replace the right hand



On most maps, a scale is usually represented as a straight line divided into several numbered units. This is called a **linear scale** or bar scale. It helps you to find how far one place is from another. It also helps you to measure distance along roads, railways and other linear features on the map.



Figure 3.3: A linear scale

Find this out on the map in Figure 3.2. Measure the length of each unit on the scale. What distance does one centimetre represent? You have probably found out that every 1 cm on the line scale stands for 500 m or half a kilometre on the ground. If you convert kilometres to centimetres, you will find that 1 km stands for 50,000 cm. Express it as a representative fraction and see what it comes to. This means that on the map every 2 cm represent 1 km.

Activity 3.2: Exploring scale

In groups, go outside the classroom and do the following:

- a) Using a metre rule or a measuring tape, measure the length and width of your classroom block.
- b) Draw a map of the classroom block on paper to scale.
- c) State the scale you have used to draw the whole block on paper as:
 - (i) a representative fraction
 - (ii) a linear scale.

A scale can also be expressed in words. Look at Figure 3.2 again. Write its scale, 1:50,000 in words. You could have written it as “Every one unit on the map represents one unit on the ground where the map was taken from” or “One centimetre on the map represents five thousand centimetres”. What you have written is called a **statement scale**.

Activity 3.2

Resources to use: Metre rule/measuring tape and drawing tools.

Skills: Collaboration, observation, measuring, scaling features in the real world, drawing a map.

- i. Organise learners into groups, lead them outside and guide them to do Activity 3.2 on page 13 of the Learner’s Book.
- ii. Observe learners as they do the activity and notice how they share responsibilities and exchange views in each group. Ensure that every learner actively participates in the activity.
- iii. Ensure that every group produces a drawn map to be shared and compared with those drawn by other groups.
- iv. Call upon group representatives to display their maps together with the types of scale and ask the class to comment on each.
- v. Guide learners to express the representative fraction and linear/bar scale as a statement.
- vi. Wrap up the activity by pointing out the three ways in which we can express the scale of a map.

Possible answers

1. Will depend on the size of the classroom block.
2. Will depend on the size and shape of the classroom block.
3. Will vary from one group to the other.

Using the linear scale to measure distance on a map

Whenever we are going on a journey, we need to get prepared. We need to estimate the amount of money and time we shall spend. This is not always easy if we do not know the distance we are going to travel. When we have a map of the area, it is possible to estimate the whole journey by using its linear scale. What we need is to know the scale of the map.

Activity 3.3: Applying scale

In groups:

Discuss and suggest the tools you need to measure the distance of the walkway or footpath from the main road to the office of your head teacher.

- (i) Get any one of the tools you have suggested, move outside and measure that distance.
- (ii) Share your results with other groups.
- (iii) Are all your results the same? If not, why do you think they are different?

Activity 3.3

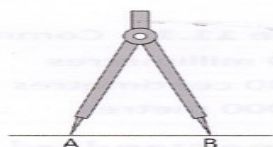
Resources to use: Organised study groups, measuring tools to be suggested by the learners, which may include: metre rule, measuring tape, foot ruler, strings, paces or strides

Skills: Communication, collaboration, measuring, recording, interactive skills

- i. Organise learners into groups and guide them to do Activity 3.3 on pages 13 – 14 of the Learner's Book.
- ii. Guide learners in a discussion to suggest the tools they may need to measure distance.
- iii. In conversation, ask learners to give reasons for their choice of measuring tools.
- iv. Observe learners in each group as they measure distance, notice how they share responsibilities and ideas, and give assistance where they may have challenges.
- v. Guide learners in a discussion to share and compare the results got from the field.
- vi. Call upon group representatives to present their results.
- vii. Wrap up the activity by pointing out that the tools they have used to measure distance on the real ground cannot be used on maps. So on maps we use different methods to find out distance along features and between places.

You could have noted that the walkway or footpath you have measured is not straight. It has bends or corners. Even on maps, there are several linear features with several bends and corners. These are called **winding features**. We can measure the distances covered by these features using different methods. These include using a pair of dividers, thread or the edge of a piece of paper.

Using a pair of dividers



The divider is placed such that each tip is at the points A and B.

(a)



Then, without disturbing the divider, the distance between the two points is measured with a ruler.



(b) Figure 3.4: How to measure distance using a pair of dividers

Activity 3.4: Using dividers



Figure 3.5: A road with bends

Get a pair of dividers, foot ruler (scale) and a pencil and do the following:

- (i) Look at Figure 3.5. From where the road begins, identify a portion which is almost straight, mark it off using a pencil and give it a number.
- (ii) Repeat this until you have divided the whole road into fairly straight portions.
- (iii) Using a pair of dividers, measure the length of the first portion.
- (iv) Transfer the pair of dividers onto the foot ruler; place the left hand pointer of the divider at zero cm and read off the length indicated by the right hand pointer.
- (v) Record the length in your notebook.
- (vi) Repeat steps (iii), (iv) and (v) above until you have measured all portions of the road.
- (vii) Add up all distances measured in order to get the total length of the road.
- (viii) Share your answer with the rest of the class and see whether you all have got the same length.

Activity 3.4

Resources to use: Pair of dividers, foot ruler, and writing tools

Skills: Measuring, recording, communication

- i. Guide learners to do Activity 3.4 on pages 14 - 15 of the Learner's Book.
- ii. Ensure that each learner has the necessary tools and can use them correctly.
- iii. Observe learners as they do the activity and assist where they get challenges.
- iv. In conversation, ask learners why in step (iv) they transfer their measurement on to the foot ruler. Ask for the equivalent of a foot ruler on a map.
- v. Wrap up the activity by asking learners to summarise the steps involved in measuring winding distances using dividers in their notebooks.

Hint: Ensure the acquisition and development of the skills listed above.

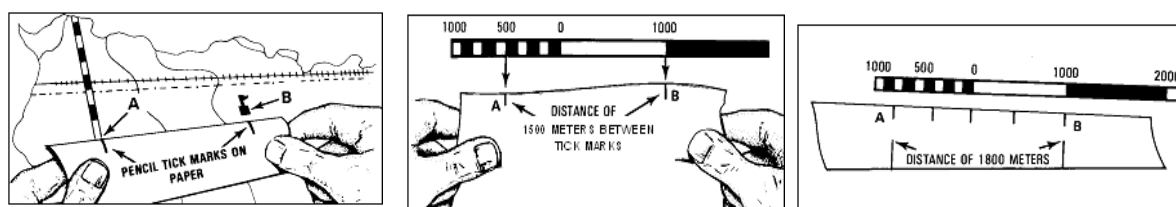
Possible answers

Length of the road is 10.8 cm – 11.0 cm

You can use the above method to measure the distance along a road, railway or river. Think of other features which you can measure using the linear scale. Remember that in the case of a map, you read distance against the linear scale instead of a foot ruler. The linear scale on the map is marked with whole numbers from 0(zero) towards the right, i.e. 1,2,3,4 kilometres and so forth.

We use this side of the scale to measure and read off distances which are in complete whole numbers. To the left of 0, the scale is divided into 10 equal parts. Each of these is 1/10th (one -tenth) of a kilometre. We use units to the left of zero to measure distances which are less than a kilometre. Using this method, try to measure the distance of any one road on the map in Figure 3.2.

Using a straight edge of paper



Step 1

Step 2

Step 3

Figure 3.6: Using an edge of paper to measure distance

Activity 3.5: Measuring distance with a piece of paper

In pairs, get a pencil, foot ruler and a small but long piece of paper with a straight edge.

Using Figure 3.5 again, do the following:

- Towards the end of the left hand side of the edge of paper, put a mark to show the starting point of the road and place it along the road with the marked point against the starting point of the road.
- Hold the paper firmly against the starting point and turn it along the road until part of the road disappears underneath the edge of paper.
- Put a mark on both the paper and map at the point where the road leaves the edge of paper. When you do this, then you have measured off a fairly straight portion of the road.
- Starting at the point you have marked, repeat steps (ii) and (iii) until you reach the end point of the road and mark it on the edge of paper.
- Transfer the edge of paper onto the foot ruler and read off the length of the road.
- Compare your result with the one you got in Activity 3.4.

Activity 3.5

Resources to use: Blank piece of paper with a straight edge, foot ruler and writing tools

Skills: Measuring, recording, communication

- Guide learners to do Activity 3.5 on page 16 of the Learner's Book.
- Ensure that each learner has the necessary tools and can use them correctly.

- iii. Guide learners to study Figure 3.6 in the Learner's Book in order to understand the steps involved in using the measuring method.
- iv. Observe learners as they do the activity and assist where they get challenges.
- v. Wrap up the activity by asking learners to summarise the steps involved in measuring winding distances using a straight edge of paper.

Hint: Ensure the acquisition and development of the skills listed above.

Possible answers

Length of the road is 10.8 cm – 11.0 cm.

Using a string or thread

We can measure distance on a map using a string or cotton thread. To understand this, try the following activity.

Activity 3.6: Measuring distance with a thread

- (i) Carry out library research on how we can use a string or thread to measure distance on a map.
- (ii) Make notes pointing out all the steps involved.
- (iii) Share your notes with the rest of the class.
- (iv) Why do you think it is advisable to use cotton thread when measuring distance?
- (v) Use the string or thread method to measure the distance along any one road on the map in Figure 3.5 above.

Activity 3.6

Resources to use: Cotton thread/string, foot ruler and writing tools

Skills: Measuring, recording, communication

- i. Guide learners to do Activity 3.6 on page 16 of the Learner's Book.
- ii. Ensure that each learner has the necessary tools and can use them correctly.
- iii. Observe learners as they do the activity and assist where they get challenges.
- iv. Guide learners in a discussion to share their research notes. Summarise their presentation on the chalkboard and correct mistakes, if any.
- v. Wrap up the activity by asking learners to summarise the steps involved in measuring winding distances using a string or thread in their notebooks.

Hint: Ensure the acquisition and development of the skills listed above.

Possible answers

1. Notes pointing out steps involved in using a string or thread to measure distance. These should include:
 - Get a string or thread and if possible wet it so that it can be aligned to the winding feature.
 - Identify the two points between which distance is to be measured and mark them using a pencil.

- Align the string or thread with the winding feature between the two points following all the bends.
- Mark the two end points on the string or thread.
- Transfer the string or thread on to the linear scale of the map and read off the distance.

2. Length of the road, 10.8 cm – 11.0 cm.

3. The cotton thread can measure distance with a high degree of accuracy since it is not elastic.

4. The comparison of results should give much the same road distance.

Using the linear scale to calculate area on a map

When using a map, we may be interested in knowing how big certain features are, for example, a farm, forest, swamp, township or an airfield. Some of these features have shapes which are similar to those of polygons, which you have learnt about in mathematics. These are called features with **regular shapes**. Other features have shapes which do not resemble any polygon. These are called **irregular shapes**. Look at the map of Uganda and find out the kind of shape Lakes Victoria and Kyoga have. Whatever shape a feature may have, we can estimate its size or area.

Using a mathematical formula

In mathematics, you learnt how to calculate the area of different shapes, e.g. a square, rectangle, triangle, circle and others, using certain formulae. Now, you are going to use the same formulae to estimate the area of different features on a map.

Activity 3.7: Applying formula

In small groups, get a metre rule or any other measuring tool and do the following:

- Look around your classroom. What kind of shape is it?
- Draw its outline in your notebook.
- Calculate the area of the classroom.
- Explain how you have got the area.

Activity 3.7

Resources to use: Metre rule/foot ruler/measuring tape and writing tools

Skills: Measuring, recording, drawing a map, calculating area

- Organise learners into groups and guide them to do Activity 3.7 on page 15 of the Learner's Book.
- Ensure that each learner has the necessary tools and can use them correctly.
- Observe learners as they do the activity and assist where they get challenges.
- In conversation, ask learners why they have decided to use the formula they have applied.
- Wrap up the activity by emphasising that when calculating areas of features on a map, we use the linear scale. For features with regular and irregular shapes, we use different methods to calculate their areas.

Hint: Make use of the learners' prior knowledge of calculating area got from mathematics to guide them to calculate areas of features on maps.

Possible answers

- Will depend on the shape of the classroom.

2. Outline to depend on the shape of the classroom.
3. To depend on the dimensions of the classroom.
4. The formula will depend on the shape of the classroom. Area to be recorded in square units.

You have noted that your classroom resembles a certain shape. So you have used the formula for calculating the area of that shape to get the area of the classroom. In the same way, we use mathematical formula to calculate areas of features with regular shapes. Remember to use the linear scale in order to get the measurements or dimensions of the features.

Activity 3.8: Using a formula on a map

In pairs, study Figure 3.7 and do the following:

a). Calculate:

- (i) the area of the aerodrome.
- (ii) the area of the railway quarters.

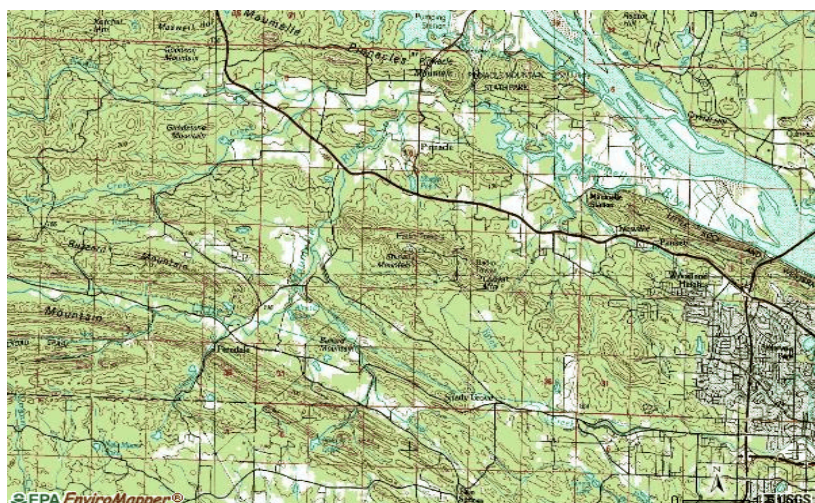


Figure 3.7: Sketch map of Tororo

Replace the place holder with a sketch map of the 1:50000(UGANDA) topographic map of Tororo

Activity 3.8

Resources to use: Sketch map is already presented in the Learner's Book, dividers, edge of blank paper, and writing tools.

Skills: Reading a map, measuring, recording, calculating area.

- i. Organise learners into groups and guide them to do Activity 3.8 on page 17 of the Learner's Book.
- ii. Ensure that each learner has the necessary tools and can use them correctly.
- iii. Observe learners as they do the activity and assist where they get challenges.
- iv. In conversation, explain to the learners why they have to subdivide the aerodrome into several pieces.

Hint: Make use of the learners' prior knowledge of calculating area got from mathematics to guide them to calculate areas of features on maps.

Possible answers

To depend on the dimensions of these features on the sketch map.

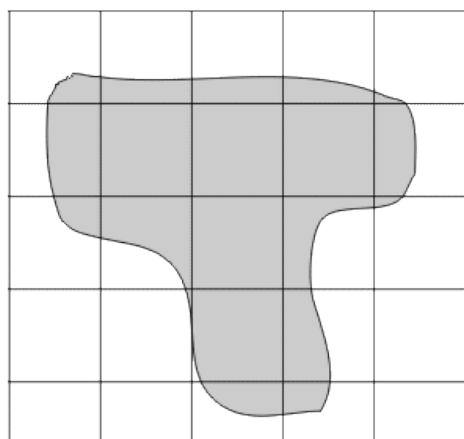
Using the map grid

Think of physical and human features in the area around your school or home area with irregular shapes. Make a list of those features. If we want to find out the area of such features on a map, we can use the **map grid** or graph paper method. On most topographic maps each grid square is usually 1 square kilometre. So the total number of squares covered by the feature is equal to the area of the feature.

Activity 3.9: Estimating area

Individually, look at Figure 3.8 and:

- (i) Identify the area covered by the lake.
- (ii) Count all grid squares which are fully covered by the lake (assume that each square has an area of 1 square kilometre). Write the number in your notebook.
- (iii) Count all squares which are touched but not fully covered by the lake and divide their number by 2. Write the result in your book. Why do you think we divide these by 2?
- (iv) Add the values you have got in steps (iii) and (iv) above. Your final result is the area of the lake.
- (v) State the formula you have used to get the area of the lake.
- (vi) Swap your results with your friend, and then discuss them with your teacher.



Redraw this diagram to bring out the impression of a lake surrounded by swamp vegetation.

Figure 3.8: Map with a lake

You could have found out that you all got much the same answer for the area of the lake. Any minor differences have resulted from the way you have counted grid squares covered by the map. You can follow the same steps and also use the same formula you have used above to estimate the area of any feature on a map with an irregular shape.

Activity 3.9

Resources to use: A picture is already presented in the Learner's Book extract

Skills: Measuring, recording, calculating area

- i. Guide learners to do Activity 3.9 on page 18 of the Learner's Book.
- ii. Observe learners as they do the activity and assist where they get challenges, especially on deciding which grid squares are full and which ones are not.
- iii. In conversation, ask learners why we divide the sum of all grid squares not fully covered by the feature by 2.
- iv. Ensure that every learner comes up with the formula used to calculate the area of the lake; correct any mistakes in the formula.

- v. Wrap up the activity by emphasising that on most topographic maps each grid square is usually 1 square kilometre. So the total number of squares covered by the feature is equal to the area of the feature.

Hint: Ensure the acquisition and development of the skills listed above.

Guide learners to divide irregular features into regular shapes and estimate the area.

Possible answers

Area of the lake = 12 square kilometres.

Using a mathematical formula

Alternatively, we can divide the irregular feature into several shapes whose areas can be calculated using known mathematical formulae. Do Activity 3.10 in order to understand this.

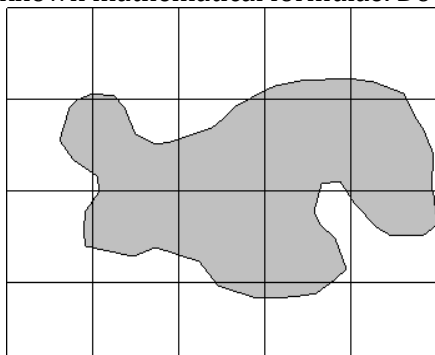


Figure 3.9: Map of a swamp

Redraw this diagram to bring out the impression of a swamp covered by vegetation. Divide the swamp into appropriate polygons using broken lines.

Activity 3.10: Applying a formula to irregular features

In pairs, look at Figure 3.9 and do the following:

- Divide the swamp into figures with regular shapes and give each figure or polygon an identification number.
- Measure the dimensions of each polygon in kilometres.
- Using a suitable formula, calculate the area of each polygon.
- Add the areas of all polygons to get the total area of the swamp.

Activity 3.10

Resources to use: A picture is already presented in the Learner's Book extract, a pair of dividers/thread/strip of paper, foot ruler

Skills: Measuring, recording, calculating area

- Organise learners into pairs and guide them to do Activity 3.10 on page 19 of the Learner's Book.
- Observe learners as they do the activity and assist where they get challenges.
- In conversation, ask learners the possible regular shapes/polygons the swamp can be divided into and the formula for calculating the area of each.
- Mark the learners' work and give prompt feedback.
- Wrap up the activity by emphasising that the area of the swamp obtained is an estimate since some parts of the swamp might not have come out as regular polygons.

Hint: Ensure the acquisition and development of the skills listed above.

Possible answers

The area of the swamp to range from 14 square km – 15 square km.

How to find places and features on a map

On the surface of earth and on maps, different features are found in different places. To be able to use the map you need to describe where features are found. Now you are going to learn how you can do this.

Activity 3.11: Identifying features on a map

Look at Figure 3.2 again and do the following:

- a) Identify:
 - (i) Any three rivers shown on the map.
 - (ii) One permanent swamp on the map.
 - (iii) One place where a school is found.
- b) Explain how you have been able to find those features.

You have noted that certain features can be found using words written against or close to them. These are the **names** or labels of such features.

Activity 3.11

Resources to use: A sketch map is already presented in the Learner's Book

Skills: Reading a map, communication

- i. Guide learners to do Activity 3.11 on page 20 of the Learner's Book.
- ii. Observe learners as they do the activity and assist where they get challenges.
- iii. In conversation, ask learners to explain the method they have used to identify the features on the map.

Hint: Ensure that every learner does the activity individually in order to develop the skills outlined above.

Possible answers

1. Rivers: To depend on the map.
2. Permanent swamp: To depend on the map.
3. Place with a school: To depend on the map.
4. Looked at the key for symbols representing the features, then read names/labels written along or against the features.

Grid and grid references

Topographic maps have a network of lines drawn all over them. These are called grid lines. They cross one another at right angles and form a grid of squares. These lines can also help you to find features anywhere on the map. The vertical lines are called '**eastings**' as they increase in value as you move east on the map. The horizontal lines are called '**northings**' as they increase in value as you move north on the map (see Figure 3.10).

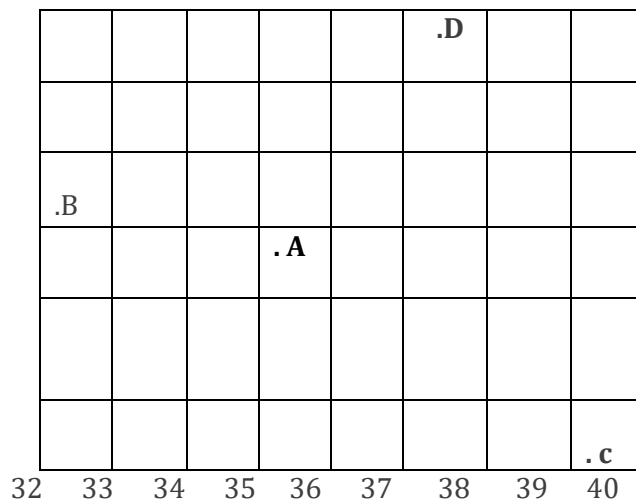


Figure 3.10: Map grid

Each line is identified by a two-figure number, which appears in an ascending order. Eastings are always read before northings when stating a location. To remember this order, say “... *along the corridor, THEN up the stairs*”. The number formed by eastings and northings is called a **grid reference**. It consists of an even number digits. It is similar to a coordinate in mathematics.

Draw a grid with both axes numbered. The vertical axis should be numbered starting with 21 at the bottom up to 26 at the top

of of

Grid references are of two types, four-figure and six-figure references. This is got by stating how far east and north the feature extends. For instance, in Figure 3.10 point **A** lies 36 east and 23 north. The four-figure grid reference for point **A** is **3623**.

You can also find and state the position of a feature using a six-figure grid reference. This is got by adding a figure to the easting and a figure to the northing of the four-figure grid reference. The third figure of each reading is one-tenth of a whole number. You get this by dividing the grid square into ten equal small squares along the eastings and ten squares along the northings.

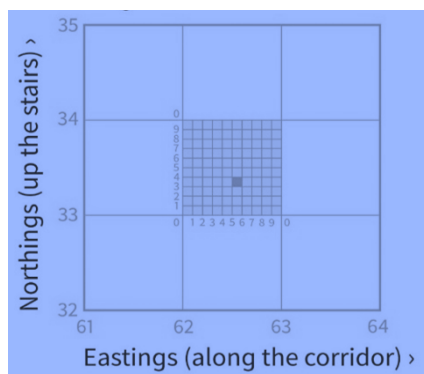


Figure 3.11: Six-figure grid reference

The feature you are trying to locate will lie in one of these tiny squares. Still remembering to go along the corridor and up the stairs, work out the extra numbers you need and put them into your four-figure grid reference, like **625 333** for the feature shown in Figure 3.11 above.

Activity 3.12: Using grid reference

In pairs, look at Figure 3.10 and:

Redraw this diagram so that its clarity improves

- (i) state the four-figure grid reference of points B, C and D.
- (ii) state the six-figure grid reference of points A, B and C.
- (iii) write at least two sentences explaining the advantages of using four-figure and six-figure grid references to locate features on a map.

Activity 3.12

Resources to use: Foot ruler, pencil, grid, which is already presented in the Learner's Book

Skills: Reading a map, using number co-ordinates, communication

- i. Organise the learners into pairs and guide them to do Activity 3.12 on page 22 of the Learner's Book.
- ii. Observe learners as they do the activity and assist where they get challenges.
- iii. In conversation, ask learners to describe the steps they have followed to come up with the grid references.

Hint: Make use of the learners' knowledge of number co-ordinates learnt in mathematics to guide them to develop the skill further.

Possible answers

- 1. The four-figure grid reference for B is 3224, C is 3921 and D is 3726.
- 2. The six-figure grid reference for A is 354234, B is 323241 and C is 393212.
- 3. For the four-figure grid references: First identified the points, read the eastings and recorded the two digits, read the northings and recorded the two digits; combined the digits for eastings and northings to get the grid reference as a coordinate.
- 4. For the six-figure grid references: Identified the point, divided the grid square into tenths, read the eastings and recorded whole numbers and tenths; read the northings and recorded whole numbers and tenths of numbers. Then combined the eastings and northings to get the grid reference as a coordinate.

Compass directions

How would you describe to a friend the route from your home to the nearest trading centre? You would probably describe it using words like at a certain point "turn left" or "turn right". However, you could do this in a better way by describing the route map. When using a map, we use compass directions.

Activity 3.13: Revising a compass

Using your knowledge from primary school,

- (i) Explain what you understand by a compass.
- (ii) Draw a diagram of a compass showing the cardinal points.

Activity 3.13

Resources to use: Foot ruler, protractor, pencil

Skills: Drawing, measuring, using a compass

- iv. Guide learners to do Activity 3.13 on page 22 of the Learner's Book.
- v. Observe learners as they do the activity and assist where they get challenges.

Hint: Ensure that every learner does the activity individually in order to develop the skills outlined above.

Possible answers

A four-point compass rose; with N, S, E, W marked and named.

The line diagram you have drawn in Activity 3.13 is not the actual compass. It is called a **compass rose** or a direction finder. To be able to use the compass to find directions more accurately, we further subdivided the cardinal directions into four other directions. These are called **intermediate directions** or inter-cardinal points. They are northeast (NE), southeast (SE), southwest (SW) and northwest (NW).

Note: Inter-cardinal points combine two directions, e.g. northeast, meaning that you move east, then north, at the same time. In other words, northeast lies north of the east.

Activity 3.14: Subdividing a compass

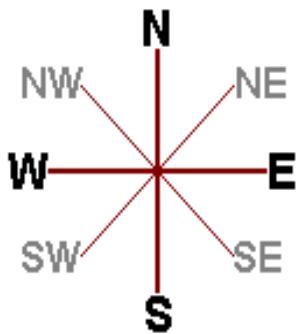


Figure 3.12: An eight-point compass rose

Copy the compass rose in Figure 3.12 into your notebook.

- a) Using a protractor, measure and state:
 - (i) the angles between nearby cardinal directions.
 - (ii) the angles between cardinal directions and intermediate directions.
- b) Divide the angles between cardinal directions and intermediate directions halfway using straight lines and measure the angle of each.
- c) Name the new directions created by subdividing the intermediate directions.

In Activity 3.14 you have come up with a compass rose with 16 points. This is called a **sixteen-point compass**. The new directions you have got combine three directions. These enable you to find and describe directions of all places and features accurately. See Figure 3.12.

To determine the direction of one feature or place from the other, draw a compass rose at the point from which you want to describe direction. Then draw a straight pencil line connecting the two points. Read off the direction corresponding or closest to the point whose direction you want to find.

Activity 3.14

Resources to use: The diagram of a compass rose is already presented in the Learner's Book, protractor, foot ruler

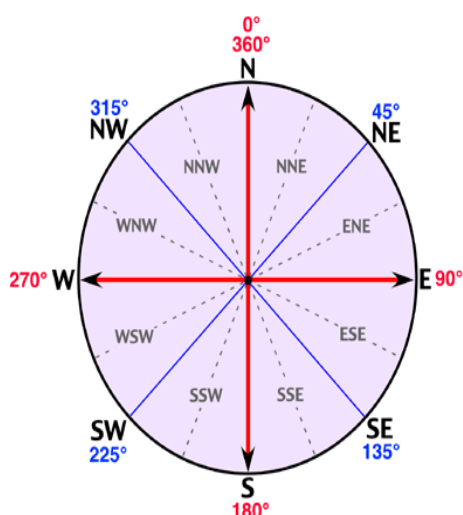
Skills: Drawing, measuring, using a compass

- vi. Guide learners to do Activity 3.14 on page 22 of the Learner's Book.
- vii. Observe learners as they do the activity and assist where they get challenges.

Hint: Ensure that every learner does the activity individually in order to develop the skills outlined above.

Possible answers

- A sixteen-point compass rose.



Activity 3.15

Resources to use: A sketch map is already presented in the Learner's Book, protractor, foot ruler

Skills: Drawing, measuring, determining bearing

- i. Guide learners to do activity 3.13 on page 23 of the Learner's Book.
- ii. Ensure that every learner has the necessary tools and uses them accurately.
- iii. Observe learners as they do the activity and assist where they get challenges.

Hint: Ensure that every learner does the activity individually in order to develop the skills outlined above.

Possible answers

1. $247^{\circ}/248^{\circ}/249^{\circ}$
2. $79^{\circ}/80^{\circ}/81^{\circ}$
3. $259^{\circ}/260^{\circ}/261^{\circ}$

Revision Exercise

Resources to use: A sketch map is already presented in the Learner's Book, protractor/thread/ blank paper with a straight edge

Skills: Measuring, determining area, reading a map, following a route on a map, critical thinking.

- i. Ask learners to do the Revision Exercise on page 17 of the Learner's Book.
- ii. Observe them as they do the exercise and notice how they go about each task.
- iii. Ensure that every learner has the necessary tools and uses them accurately.
- iv. Mark learners' work and give feedback.
- v. In conversation, find out learners' challenges and give necessary assistance in order to develop the required skills

Hint: Emphasise that every learner does the activity individually in order to develop the skills outlined above.

Possible answers

1. 1/50,000 or 1:50,000.
2. Every one unit on the map represents five thousand units on the ground where the map was taken from.

Or: One centimetre on the map represents five thousand centimetres.

Or: One centimetre on the map represents half a kilometre on the ground.
3. 8.5km/8.6km/8.7km/8.8km/8.9km/9.0km
4. 3.5 square km
5. Shillings 6,100
6. Will vary but may include use of:

- Compass direction, bearing, grid reference, relative ground distance, relative location using place names.

Using latitude and longitude

Activity 3.16

Resources to use: A sketch map is already presented in the Learner's Book, atlases

Skills: Reading a map, using a map

- Guide learners to do Activity 3.14 on page 24 of the Learner's Book.
- Ensure that every learner has the necessary tools and uses them accurately.
- Observe learners as they do the activity and assist where they get challenges.
- In conversation, ask learners how they can crosscheck the accuracy of their answers. Guide them to use the atlas to verify all their answers.

Hint: Emphasise that every learner does the activity individually in order to develop the skills outlined above.

Possible answers

All answers are presented in the atlas.

Activity of Integration

Ask your teacher to provide you with a topographic map (scale 1:50,000) of the area where your school is found or any other map showing your school and the surrounding areas. Study the map and find out places that you would wish to visit if given a chance to go for a geography tour towards the end of the school term.

- Choose a route that you would follow in order to see a good number of interesting features and draw a simple map with marked stopover points to show this. Write at least two sentences describing the activities you would do at each stopover point.
- Determine the distance (in kilometres) your journey would cover from the school to the farthest place you would wish to visit.
- Estimate the total amount of money you would spend on transport, including the return journey, if the transporter charges 100,000 shillings per kilometre.

This task is aimed at assessing the extent to which the learner has grasped the skill of reading and using a map to find out about the area. Encourage learners to come up with original ideas based on the survey map provided. Ask learners to do the task at the end of Chapter Three in the Learner's Book individually. Give a time frame to ensure timely application of the knowledge learnt and skills acquired.

- Ensure that every learner produces written responses to the task.

(ii) Mark the learners' work and give feedback and guidance where needed.

Tools to use: No specific tools

Skills: Reading and using a map, drawing a sketch of a given map, measuring distance on a map, critical thinking, problem solving

Possible responses

Responses will depend on the locality and the map provided.

- i. The route chosen should be one along which the learner can view a range of interesting features. This will vary depending on one's interest. The tourist activities at stopover points (itinerary) will depend on the features of interest.
- ii. Distance will vary depending on the route chosen.
- iii. Cost of the journey will depend on the route taken.

Evaluation grid for the integration activity

Output	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5
(i)	Correct use of subject resources	Correct interpretation of task	Coherence of response	Accuracy of information	Excellence
	The learner gives the correct interpretation of the situation. x/1	The learner applies knowledge about the local environment by selecting features which may be interesting to see. x/2	The learner gives ideas about the situation logically. x/3	The learner relates the route map and activities to the interesting features in the area. x/3	The learner uses original ideas. x/1
(ii)	The learner gives the correct interpretation of the situation. x/1	The learner applies knowledge of measuring distance to the given situation. x/2	The learner chooses and applies the appropriate method of measuring the distance on a map. x/3	The learner comes up with the correct distance of the route chosen on the map. x/1	The learner states the correct units for the road distance measure x/1

(iii)	The learner gives the correct interpretation of the situation. x/1	The learner applies relates transport fare to the distance measured in the given situation. x/2	The learner applies the idea of the return journey when computing the total transport cost. x/3	The learner comes up with the correct cost basing the route chosen on the map. x/1	
	The learner will be considered to have achieved the competence if s/he attains 2/3 of the total scores available (or of the assessment criteria) or 2/3 of the outputs.				

Chapter Four: Ways of Studying Geography

Overview

In this topic, focus learners to understand ways in which they can find out geographical information about both local and faraway places. Use a range of interactive methods to enable the learners to develop the skills listed under each activity.

In this topic, guide learners to:

- understand how to use and apply the different techniques used in fieldwork.
- use maps, aerial images, photographs, graphs and charts to communicate data.
- analyse and present the statistics gathered in fieldwork.
- write conclusions to summarise fieldwork findings.
- know the three different angles from which photographs can be taken and the terms used to describe the different parts of a photograph.
- appreciate the effect of perspective on oblique photographs.
- differentiate between photographs and maps.
- make a sketch of an area on a photograph and describe an area seen on a photograph.
- appreciate that fieldwork and photographs are important because geography is the study of the real world.
- use fieldwork to study a trading centre, town or other urban area.

In this topic, you are going to learn how and where you can find geographical information. After reading about and using the different sources of geographical information, you will be able to suggest which source is most important and why.

Activity 4.1: Finding out information

In pairs, study Figure 4.1 and do the activities that follow.

Year	Amount of crop produced in tonnes		
	Paddy Rice	Maize	Wheat
2010	25,070	23,000	16,670
2012	23,040	25,000	14,290
2014	24,950	25,040	15,710
2015	24,880	23,530	16,000
2016	25,280	23,180	16,830

(a)

Govt urged to boost tourism using lakes

Investment. South African Airways observes that Uganda is not effectively utilising its water bodies to attract tourists unlike other countries.

BY STEPHEN OTAGE
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KAMPALA. South African Airways has advised the government to copy from prominent global tourism destinations and popularise tourism investments around and on the country's water bodies.

Speaking in an interview on Monday, Ms Yogi Biriggwa, the South African Airways country manager, said prominent destinations such as Mauritius, Rio-de-Jenairo in Brazil, Southern France, Durban in South Africa, and Mombasa in Kenya are popular globally because of their locations and investments on and around the water bodies.

She said this makes them attractive and easy to market internationally.

"We do not have water sport, no cruises, no weddings, no speed boats, no beaches, no floating restaurants, and this is what people always ask for immediately they arrive here," she said, adding: "You can make a lot of money. Ugandans are doing nothing about it yet they are sitting on a gold mine," Ms Biriggwa said.

She said if someone invested in speed boats between Entebbe and Port Bell of Ggaba beach, the visitors' unforgettable experiences would market Uganda abroad.

"Apart from mountain gorillas, Uganda has a lot to offer. If Seese Islands were in another country, they would be filled with water sports. Southern France, Mombasa and Durban in South Africa are beautifully built around the ocean," YOGI BIRIGGWA, SOUTH AFRICAN AIRWAYS COUNTRY MANAGER

Yesterday, Tourism South Africa, the national body which rebranded South Africa to erase the dark image that had been created by Apartheid, sponsored 10 successful women from Uganda to visit South Africa's prominent tourism attractions. This was aimed at turning them into ambassadors who will influence similar investments to come to Uganda or mentor indigenous Ugandans to set up similar businesses.

The one-week tour is a package will see them experience the balloon safari, visit the Malaria-free Pilansberg National Park, five star accommodation at Saxon Hotel, Intercontinental, Oliver Reginald Tambo Hotel, the Palace Hotel Sun City and 12 Apostles, among other destinations.



Some of the boats at Ggaba Landing Site in Kampala. PHOTO BY STEPHEN OTAGE

(b)



(c)

Figure 4.1: Some sources of geographical information

- (i) Summarise the information presented in the table, newspaper extract and photograph.
- (ii) Draw a graph to show the production of any **one** crop shown in the table from 2010 to 2016.
- (iii) Discuss the advantages and disadvantages of each source of information.
- (iv) In your opinion, which source is most effective in giving geographical information? Give reasons why you think it is the most effective.

Activity 4.1

Resources to use: Graph paper, foot ruler, lead pencil, coloured pencils

Skills: Collaboration, analysing information, summarising information, critical thinking, representing numerical data

- i. Organise the learners into pairs and ask them to do Activity 4.1 on page 30 of the Learner's Book.
- ii. Observe the learners as they do the activity and guide them accordingly.
- iii. In conversation, ask the learners to explain how they have selected the information they have included in the summaries.
- iv. Observe the learners as they discuss and assess how well they respect each other's views.
- v. Wrap up the activity by emphasizing that these are not the only sources of geographical information.

Hint: Ensure the acquisition and development of the skills listed above.

Possible answers

1. Table

- The table shows that there are three crops produced in the area where the data was taken from: paddy rice, maize and wheat. The crops were produced for five selected years: 2010 to 2016.
- Paddy rice was produced in the least amount in 2012, and highest amount in 2014; maize in 2010 and 2015, respectively; wheat in 2015 and 2016, respectively. Generally, paddy rice is the most produced and wheat the least produced from 2010 to 2016. The production of each crop rose and fell (fluctuated) over the period.

Extract

- The Government of Uganda is advised to increase tourism in the country by investing more money in tourist attractions related to the country's water bodies in addition to the mountain gorillas.
- Such attractions include water sports, cruises, beaches, speed boats between Entebbe and Port Bell or Ggaba beach, and weddings. These will give visitors unforgettable experiences which they would use to market Uganda back in their home countries.

Photograph

- Highland/mountainous area with a river valley in the middle. The river flows from the highlands. The river valley is shallow with numerous large rocks (boulders) lying on its floor.
 - Land is higher in the background and on the left hand side, and lower in the middle and right hand side.
 - It is about ways of promoting tourism in Uganda.
 - The highlands have very little, short vegetation. Some parts on the slopes of the highlands are bare. Scattered trees are found on both sides (banks) of the river valley.
 - There are some settlements on the upper (upstream) end of the river valley.
2. The advantages and disadvantages of the sources will depend on the opinions of the learners.
 3. These will vary depending on the learners' opinions.

Studying geography through fieldwork

Activity 4.2: Finding out from the field

In groups, go outside the school and:

- (i) ask the people in the local area about the different activities they do.
- (ii) look around and write down the different things you see in the area.
- (iii) write a report about the area studied.
- (iv) through discussion, share your findings with other groups.

You have probably found out from field information about the activities carried out by people in the area around your school. You have also seen the natural features found in the area. The information you collected from the field is the geography of the area around your school. So, the field is one of the sources of geographical information. Visiting an area and collecting information about it is called **fieldwork** study.

Activity 4.2

Resources to use: Organised study groups, local environment

Skills: Collaboration, interactive skills, observation, critical thinking, field sketching, analysing and report writing.

- i. Organise learners into groups and guide them to do Activity 4.2 on page 29 of the Learner's Book.
- ii. Lead learners to the field and guide them through data collection.
- iii. Observe learners while in the field and notice how they interact with the local people, and how they collaborate in a group.
- iv. In conversation, ask the learners to explain the different ways through which they have found out information about the physical environment and human activities in the area.
- v. Guide the learners through a discussion so they can share their findings as a class.
- vi. Wrap up the activity by emphasising the relationships existing in the area studied between the natural and created environments.

Hint: Ensure the acquisition and development of the skills listed above.

Possible answers

Fieldwork report to depend on the nature of the area studied.

How can we study geography through fieldwork?

To be able to understand the steps and methods involved in carrying out fieldwork, do the following activity.

Activity 4.3: Exploring steps in fieldwork

In a group or individually:

- (i) Choose a topic to be studied in the area outside class.
- (ii) Decide the reasons (objectives) for doing the fieldwork.
- (iii) Decide how you are going to collect information while in the field.
- (iv) Go out to the field and collect the information, emphasising how the natural environment and human features are related.
- (v) Draw a map showing how physical and human features are distributed in the area.
- (vi) If possible, you may carry out measurements of particular things in the field or you may ask people how much land is used for each activity, how many buildings of a certain kind are in the area etc.
- (i) After collecting all the information you need, write a report about the area studied. Through discussion, compare group reports.

While in the field, you collected some information such as that about the relief of the area, vegetation types, and crops grown or how people use their land, type of buildings and so forth, by looking around and seeing things by yourself. This is called **observation**.

Your teacher could also have given you a number of questions to ask people in the field in order to get information from them. This list of questions is called a **questionnaire**.

Activity 4.3

Resources to use: Organised study groups, metre rule/foot ruler/measuring tape, clipboard, writing tools, magnetic compass, and local environment

Skills: Collaboration, interactive skills, critical thinking, drawing field sketches, writing a report

Activity 4.3

- i. Organise learners into groups or as individuals and guide them to do Activity 4.3 on page 31 in the Learner's Book.
- ii. Observe learners as they do the activity and notice how well they collaborate and express themselves.
- iii. In conversation, ask learners to explain the names they suggest for the methods used to collect information.
- iv. Guide the discussion to assist learners in sharing the names they have suggested. Correct the mistakes made, if any.

Possible answers

1. Topic and objectives: to depend on the area to be studied but should be logical and geographical.
2. Methods may include:
 - Talking to the people in the area
 - Measuring the height and size of features
 - Drawing a map
3. Measurements to depend on the features in the field and tools used.

4. Sketch map: to depend on the area studied, but should have features represented using suitable symbols, title and key/labels.
5. A fieldwork report containing topic, objectives, findings with illustrations and conclusions.

Activity 4.4: Understanding methods

In pairs, discuss and suggest possible names for the following methods you could have used to get some information while in the field. Through discussion, share the names you have suggested with the rest of the class.

- (i) Talking to the local people and asking them questions about the things they do.
- (ii) Measuring the size of gardens, market stalls, buildings and other features in the field.
- (iii) Drawing sketch maps, field transects and panoramas.

Activity 4.4

Resources to use: Organised study pairs, no special tools needed

Skills: Collaboration, communication, analysing information

- i. Organise the learners into pairs and ask them to do Activity 4.4 on page 31 of the Learner's Book.
- ii. Observe the pairs as they discuss and assess how well they cooperate and respect each other's views.
- iii. Ensure that each pair comes up with a write-up to share with the rest of the class.
- iv. Guide the learners in the discussion as pairs share their views and correct the mistakes made, if any.

Possible answers

1. Interviewing/oral interview
2. Measurement/measuring
3. Field sketching/drawing and annotating

Writing a report about fieldwork

You collected information about the area you studied during fieldwork. How do you think one can know what the geography of the area you studied is like? Possibly you have thought of telling and explaining to the person what you found out. Since it is not possible to tell everybody what we have got from the field, we write it down so that others can read for themselves. The information we write about the area studied is called a **fieldwork report**. To be able to write a report about your study, do Activity 4.5 below.

Activity 4.5

Using the information you collected during the field study you did in Activity 4.3, follow the steps below and prepare a fieldwork report. Present the report to your teacher for any assistance you may need.

- (i) Remember the topic and objectives of your study and follow them to make your report.
- (ii) State the topic and summarise your objectives at the beginning.
- (iii) Briefly describe the area studied, possibly with a map.
- (iv) Write down the information you got about every objective in words.
- (v) Analyse the statistics you got, if any, and present them in tables, charts or graphs.
- (vi) Include photographs or other maps, if any.
- (vii) Summarise what you found out from the fieldwork, including the relationships between the people of the area and their physical and human environment.

Activity 4.5

Resources to use: Field information gathered in Activity 4.3

Skills: Writing a field report, effective communication

- i. Ask learners individually to do Activity 4.5 on page 32 of the Learner's Book.
- ii. Observe learners as they do the activity and assist them where they get challenges.
- iii. Ensure that every learner participates in the activity and comes up with an individual field report.
- iv. Mark the learners' reports and give prompt feedback.

Hint: Emphasise that learners build their report using the information gathered in Activity 4.3.

Possible answers

Fieldwork report to depend on the area studied topic and objectives of the study. It should be organised in a logical order: Topic, objectives, findings, and conclusions made. It should contain relevant examples, tables, annotated sketch maps, and other diagrams.

Learning geography through photographs

If we cannot reach a place very easily, we can learn about it by looking at its **photographs**. These can tell us a lot about the geography of even those areas we have never been to. To understand this, do the following activity.

Activity 4.6

Study Figure 4.1 and do the activities that follow.



Figure 4.1: A photograph as a source of geographical information

- (i) In your notebook, write down the natural and human features you see in the photograph.
- (ii) Explain how any two human features are influenced by the natural environment.
- (iii) In what ways do you think human activities might affect the natural environment?

All that you have written about Figure 1 is the geography of the area where the picture was taken. So studying photographs is another way in which we can get geographical information.

Activity 4.6

Resources to use: No special tools needed

Skills: Interpreting photographs, finding out information, analysing information

- i. Ask the learners individually to do Activity 4.6 on page 3 of the Learner's Book.
- ii. Guide the learners on how they can use a photograph to find out information about an area.
- iii. Observe the learners as they do the activity and assist them where they get challenges.
- iv. Mark the learners' work and provide the relevant feedback.

Possible answers

1. Natural features: Mountain/ highland, valley, rocks/boulders, vegetation/ trees and grass.
Human features: Houses/ settlements, railway line, gardens, quarry, post/pole.
2. Settlements and the railway line are found in the low lying valley; they avoid the highlands.
The quarry is found on steep slopes.
Gardens are found on relatively gentle slopes; they avoid steep slopes.
3. Cultivating steep slopes may expose the highlands to soil erosion when heavy rains come.
Quarrying on the slopes of highlands may lead to destruction of vegetation as all plant cover is removed in order to remove the rocks/boulders.
Burning the vegetation in the highlands is likely to lead to loss of wild animals as their habitat is destroyed.

Hint: Emphasise that the learners get all the responses from evidence presented in the photograph.

Types of photograph

Photographs are of different types. These depend on the angle at which the photographer looks at the features on the ground through the camera. Which types do you know? Those taken while the photographer is standing on the ground on another feature connected to the ground are called **ground** photographs. Photographs can also be taken from the air, i.e. when the photographer is not connected to the ground in any way. These are called **aerial** photographs. To understand this further, do Activity 4.7.



(a)

(b)

Figure 4.1: The Rift Valley in Uganda



(a)

(b)

Figure 4.2: Kampala City

Activity 4.7

Look at Figures 4.1 and 4.2 above and:

- (i) identify and write in your notebook the buildings and vegetation in each photograph.
- (ii) explain the differences between the photographs shown in each figure.
- (iii) suggest what type of photograph each one is. Give reasons to support your opinion.

You could have realised that aerial photographs are not the same. This is because while in the air, the photographer can look at features on the ground at different angles. Photographs taken when the observer is looking at features vertically from the air, i.e. at an angle of 90° , are called **vertical aerial** photographs. These show only the top views on the ground, with all features appearing as flat objects. The photographs taken looking at features at an angle less than 90° are called **aerial oblique** photographs. These show both the top and side views of objects.

Activity 4.7

Resources to use: Photographs are already presented in the Learner's Book

Skills: Observation, interpreting photographs, analysing, communication

- i. Ask learners to do Activity 4.7 on page 31 of the Learner's Book.
- ii. Observe learners as they do the activity and assist them where they get challenges.
- iii. Ensure that every learner participates in the activity and comes up with an individual write-up.

Hint: Emphasise that learners get all responses from the photos provided; background knowledge should only be used as explanation.

Activity of Integration

Abu Saidi, a student of Ife High School in Nigeria, wants to study the geography of Tanzania. He has visited your school looking for assistance on how he can find out the information he wants.

Using the knowledge and skills you have learnt under this topic, write an advice note of about one page to help him get the information about the geography of Tanzania. Suggest to him which method/methods would be the most useful and why.

Tools to use: No specific tools

Skills: Critical thinking, creative thinking, problem solving and effective communication.

This activity is aimed at assessing the extent to which the learner has understood the different sources of geographical information and the methods one can use to find out the information. Encourage learners to elicit original ideas reflecting understanding and application of the knowledge they have acquired in the topic.

Ask learners to do the activity at the end of Chapter Four in the Learner's Book individually. Give a time frame to ensure timely application of the knowledge learnt and skills acquired.

(iii) Ensure that every learner produces written responses to the task.

(iv) Mark learners' work and give timely feedback and guidance where needed.

Possible responses

How Abu Said can get the information:

1. Reading books, magazines and newspaper articles about Tanzania.
2. Reading maps showing different aspects of Tanzania.
3. Studying and interpreting photographs taken in Tanzania.
4. Visiting the country to observe and ask the people of Tanzania about the physical environment and human activities.

The most effective method/methods

- These will vary depending on the learner's ability to evaluate the possible methods against the costs involved while using them.

Evaluation grid for the integration activity

Criterion 1	Criterion 2	Criterion 3	Criterion 4
Correct use of subject resources	Correct interpretation of task	Coherence of response	Accuracy of information
The learner gives the correct interpretation of the situation.	The learner applies knowledge about representing features in the local area on a map.	The learner gives ideas about the situation logically.	The learner relates the map to be drawn to the local area in the given situation.
x/3	x/2	x/5	x/5

NB: The learner will be considered to have achieved the competence if s/he attains 2/3 of the total scores available (or of the assessment criteria).

