

NEW ORDINARY LEVEL GEOGRAPHY RESEARCH BOOK (DETAILED)

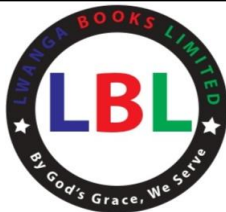
SENIOR ONE TO SENIOR FOUR

“LEARNER’S RESEARCH BOOK”

BASED ON THE NEW LOWER SECONDARY CURRICULUM

By





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There's No Limit To Your Success

Preface

This learner's research book has been written in line with the revised geography syllabus for the new lower secondary curriculum.

The main reason as to why We have written this book, is to make research easier to learners as they are making their own notes in geography. Therefore, this is a detailed research book for the new revised geography ordinary level syllabus.

This research book has been written in a Simplified way to help students read and understand the competence based geography on individual basis as they are coming up with their own notes. Therefore, learners understand key concepts and apply them in real life.

This research book has been equipped with various images and diagrams to ensure learners understand and relate geography concepts well.

This learner's research book is one of the materials which are to be used to support the teaching and learning process of the new lower secondary curriculum.

Lwanga Books Ltd feels confident that this Book will be of immense value to both the learners and the teachers.

Any suggestions for improvement of this book are most welcomed, thanks.

“It is not what We do for you but what We will teach you to do for and by yourselves that will eventually make you successful beings in the society”

Acknowledgement

Lwanga Books Limited is deeply indebted to all those who participated in the development of **Lwanga William S1-S4 Geography Learner's Research Book**.

Special thanks go to **Mr. Lwanga William**, the CEO Lwanga Books Ltd for his valuable insights and advice on all publishing matters.

We would like to express our sincere appreciation to all those who worked tirelessly towards the production of this learner's research book.

First and foremost, we would like to thank our families and friends for supporting all our initiatives both financially and spiritually, Lwanga William's parents; **Mr. William Lwanga** and **Mrs. Harriet Lwanga**, his brother; Mr. Nsubuga Grace.

The initiative and guidance of the publishing partners, Ministry of Education and Sports (MoES) and National Curriculum Development Centre (NCDC) in development and implementation of the New Lower Secondary Curriculum are highly appreciated.

We thank God for the wisdom He has given us to produce this volume of work. May the Almighty God bless all the students that will use this book with knowledge of making their own notes as they are making research.....**AMEN**. We welcome any suggestions for improvement to continue making our service delivery better.

NB: "Search" {lwanga william} on youtube and subscribe (also tap on the notification bell) to that you-tube channel and watch the subject based project lessons that are on-going. " subscription is for free"

INTRODUCTION

DEFINITIONS OF GEOGRAPHY

Geography is defined differently by many geographers:

Below are some of the definitions:

1. Geography is the study of man and his surroundings (Environment)
2. Geography is the knowledge which attempts to discover the distribution of facts of the Earth in relation to man.
3. Geography is the study of Earth as a home for man. Etc

REASONS FOR STUDYING GEOGRAPHY

Geography is studied for a number of reasons and here below are some of them:

1. We study geography to learn and understand our environment as environment entails a lot for man's survival.
2. Geography as a subject trains people skills of map reading, observation recording, measuring in field work and these skills are of vital importance in one's life.
3. Through geography man earns a living by learning good soils e.g. loam soil that is good for agriculture.
4. We study geography in an attempt to learn the physical appearance of any landscape for purposes of settlement, road construction etc.
5. We study geography in a bid to pass exams and get employment after acquiring the information.
6. Through geography one is able to conserve his environment.
7. Geography helps us to know the type of climate suitable for agriculture.

HOW IS GEOGRAPHY RELATED TO OTHER SUBJECTS

Geography can be related to subjects like mathematics, Chemistry, Physics, Biology etc.

1. Geography to mathematics: In the two subjects there are statistical calculations e.g. bar graphs, pie-charts etc.
2. In geography and Biology, there is a study of Flora (plants) and fauna (animals).

3. In geography and chemistry there is a study of weathering which involves the following processes:

- (i) hydration
- (ii) Oxidation
- (iii) reduction
- (iv) carbonation
- (v) hydrolysis

4. Geography in relation to physics, there is a study of the effects of gravitational force on the environment, speed of wind, the Earth's rotation, pressure systems etc.

BRANCHES OF GEOGRAPHY:

There are three major branches of geography and these are;

- (i) Physical geography
- (ii) Human geography
- (iii) Political geography

1. PHYSICAL GEOGRAPHY:

This branch of geography deals with the study of physical features such as mountains, vegetation, soils, climate etc under this branch there are other studies which include;

- (i) Climatology: The study of climate
- (ii) Geomorphology: The study of land forms
- (iii) Geology: The study of rocks
- (iv) Oceanography: The study of Oceans
- (v) Pedology: The study of soils
- (vi) Astronomy: The study of stars etc.

2. HUMAN GEOGRAPHY:

This branch of geography involves the study of economic activities such as fishing, mining, transport and other activities related to land use like settlement, urbanization, industrialization etc.

3. POLITICAL GEOGRAPHY:

This branch of geography deals with defining political boundaries of different countries from other geographical regions e.g. boundaries of Uganda, Kenya, Tanzania, Democratic Republic of Congo, Burundi, Rwanda, Somalia etc. from other regions.

TYPES OF ENVIRONMENT

Environment is the surrounding of man and in environment we have things like vegetation, buildings, mountains, lakes, rivers etc.

There are two types of environments and these are;

- (i) Natural environment
- (ii) Artificial environment
- (i) **Natural environment:** This is God created environment. In this kind of environment we have things like mountains, valleys, lakes, Oceans, seas etc.
- (ii) **Artificial Environment:** This is man made environment and here we have things like roads, buildings, bore holes etc.

Alternatively;

The meaning of Geography

- Scientific study of the earth as a home of man.
- Study of inter relationship on natural and human phenomena on the earth's surface.

Environment

- All external conditions surrounding an organism which has influence over its behaviour.

Environment can be divided into two:

1. The Physical Environment
 - Natural physical conditions of weather, climate, vegetation, animals, soil, landforms and drainage.
2. The Human Environment
 - Human activities such as farming, forestry, mining, tourism, settlement, transportation, trade and industry.

Branches of Geography

1. Physical Geography
 - Deals with the study of natural physical environment of human kind. The areas covered include:
 - a) Geology- study of the origin, structure and composition of the earth. It includes study of rocks.
 - b) Geomorphology- the study of internal and external land forming processes and landforms.
 - c) Climatology- the study of climate and weather
 - d) Pedology- the study of soils
 - e) Biogeography - the study of soils, vegetation and animals.

- f) Hydrology- the study of water bodies
- g) Spatial geography- study of space

2. Human and Economic Geography

- Study of people and their activities on the earth's surface. The areas covered include:

- a) Mining
- b) Forestry
- c) Agriculture
- d) Fishing
- e) Wildlife and tourism
- f) Industry
- g) Energy etc.

3. Practical Geography

- A smaller branch which equips the learner with practical skills that enhance their understanding and interpretation of human and physical geographical information. The areas are:

- a) Statistical methods
- b) Map work
- c) Field work
- d) Photograph work

Importance of Studying Geography

1. Facilitates good relationship among nations by studying geography of other regions of the world.
2. It's a career subject in that it enables one to go for advanced studies in specialised fields e.g. geography teachers, meteorology, surveying etc.
3. Enables us to appreciate other people's way of life by learning economic activities of different communities within our country and other parts of the world.
4. Enables us to conserve our environment when we learn negative and positive effects of human activities on the environment.
5. Enables us to conserve our resources when we learn wise use of resources in conservation and management of resources e.g. wildlife, forests, energy, etc.
6. Inculcates in us virtues of cooperation and patience as we work in groups.
7. Makes us to appreciate manual work as we are involved in practical geography which may lead to self employment.

8. Promotion of industry such as tourism by guiding tourists to places of interest by using maps, calculations of distances etc.

Relationship between Geography and Other Subjects

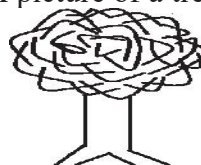
1. Mathematics-mathematical techniques are used in drawing graphs and pie charts and mathematical formulae are used in geography to calculate distances, areas, population density, population densities, etc.
2. History-history uses geographical tools like maps, charts and graphs to show where past events took place e.g. the movement of people in the past.
3. Biology-Geography explains the distribution of organisms and factors influencing their distribution on the earth's surface.
4. Physics-geography uses physics principles and formulae to calculate and describe aspects such as magnetic field, gravity, vibrations of the earth etc.
5. Chemistry-geography applies chemistry in studying chemical composition and chemical changes which take place in soils and rocks.
6. Agriculture-geography studies farming systems, their distribution and factors affecting farming activities.
7. Meteorology-geography uses meteorological information in the study of weather and in classifying climatic regions and mapping them.
8. Geology-geography studies rocks.

SHOWING THE LOCAL AREA ON A MAP

A MAP AND PICTURE

A map is a representation of an object seen and drawn from above, while a picture is a representation of an object seen and drawn from side. And below is the diagrammatic difference between a map and picture:

- ✓ A picture of a tree



- ✓ A map of a tree.



TYPES OF MAPS:

Maps are categorized into two maps and these are;

- (i) Relief maps
- (ii) Distribution maps

(i) Relief maps: These are maps containing features that show the height of the land. Such features include mountains, valleys, lakes etc.

(ii) Distribution maps: These are maps which show the distribution of population, vegetation, industries, minerals etc.

CHARACTERISTICS OF A GOOD MAP

A good map must have the following attributes:

- (i) Title (heading)
- (ii) Key
- (iii) Compass
- (iv) Scale
- (v) Frame

(i) Title (heading) on a map there must be a heading (title). This tells the map reader what the map is all about. Without a title it becomes difficult for some one to know what the map is all about.

(ii) Key: A key helps to describe all symbols that are used on a map. Without a key, it becomes very difficult for some one to tell what each symbol used on a map represents.

(iii) Compass: This shows the location of the map. A map without a compass is described as a poor map because it becomes hard for some to tell where the map is located.

(iv) A Scale: A scale on a map tells the accurate distances in Kilometers, or miles covered by a certain map on the actual ground.

(v) Frame: A good map should be framed to show the demarcation of the area occupied by the map.

MAP READING:

Map reading refers to the physical interpretation and location of features on a map extract. A map of this nature describes the general landscape. These maps show natural and artificial features and they are commonly known as Topographical maps. In reading a map, a scale is of vital importance.

A scale is a ratio of the size of the map to the actual ground. There are three types of scales normally used in map reading skills and these are;

- (i) Statement scale
- (ii) Representative fractional scale
- (iii) Linear scale.

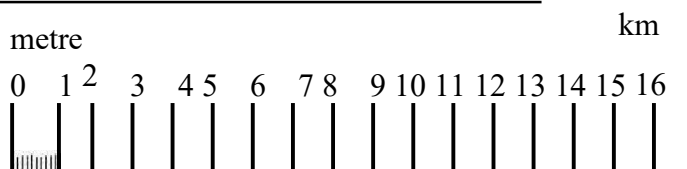
(i) A statement Scale: This is for example 1cm is equivalent to 1km on the actual ground. This means that 1cm on the map represents 1km on the actual ground of the map extract.

(ii) A representative fractional scale (R.F.S) This type of scale can be expressed in two ways and these are:

- (a) As a ratio for instance 1:50,000
- (b) As a fraction e.g. $\frac{1}{50,000}$

The above information means that one unit on the map represents 50,000 of the same unit on the actual ground of the map extract.

(iii) A Linear Scale: This is a line divided into sections and each of which represents a unit of measurement on the ground and in most cases these units are numbered, they are in kilometers or miles. While those small units on left represent decimal points as shown below:



A LINEAR SCALE

A Linear scale above helps to measure distances on a map.

Distance can be defined as the lengths between two points say A – B.

REVIEW QUESTIONS:

- (i) Define a scale
- (ii) List down any two types of scales you know
- (iii) With the help of a diagram, draw a linear scale
- (iv) As a geographer, explain the importance of a scale on a map.

COLOURS USED ON A MAP EXTRACT

There are a number of colours used on a map extract and these are;

- (i) Brown
- (ii) Red
- (iii) Blue
- (iv) Green
- (v) Black

(i) BROWN: This colour is used to show contours and contours are brown lines used to show areas on the map with the same height.

(ii) RED: This colour on a map is used to show roads, boundaries, air fields etc.

(iii) BLUE: This colour on a map is used to show water bodies e.g. lakes, rivers, streams etc.

(iv) GREEN: This is used on a map to show vegetation cover e.g. forests, swamps, plantation etc.

(v) BLACK: This colour is used to show communication routes e.g. roads, railway lines, and even settlements.

BEARINGS AND DIRECTIONS

Directions are based on four main points of a compass or cardinal points and these are;

1. South direction
2. East direction
3. West direction
4. North direction

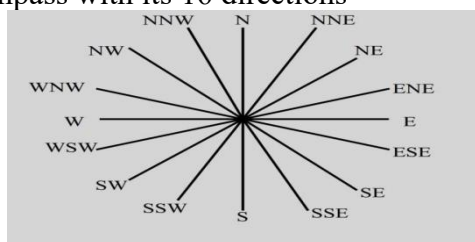
On advanced maps, three norths are shown and these are shown as follows:

- (i) The true North: This is based on the North pole
- (ii) The grid North: This is based on the grid system of the map.
- (iii) The magnetic North: This is based on the direction in which the compass needle points.

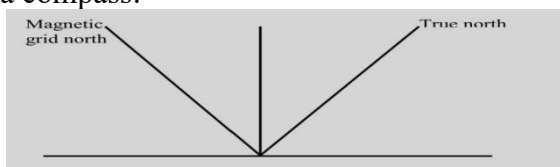
A compass itself has 16 directions but the main cardinal points are four (4) and these are;

1. North
2. East
3. South
4. West

Below is a diagrammatical illustration of a compass with its 16 directions

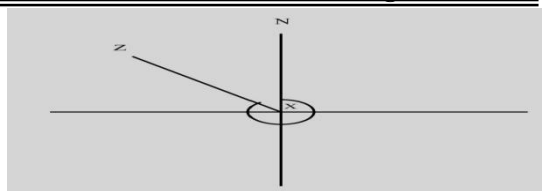


The diagram below shows the true norths of a compass:



BEARINGS:

Directions may be measured as an angle or bearing and they are always expressed in degrees in a clockwise direction from North. For example if one was to find the direction of point 2 from X. He or she is supposed to first find the North direction on the map and then draw the four main compass at point X then join the two points with a straight line. After joining the points then measure the degree right away from North clock wise with a protractor till it meets the line which joins the two points as follow:

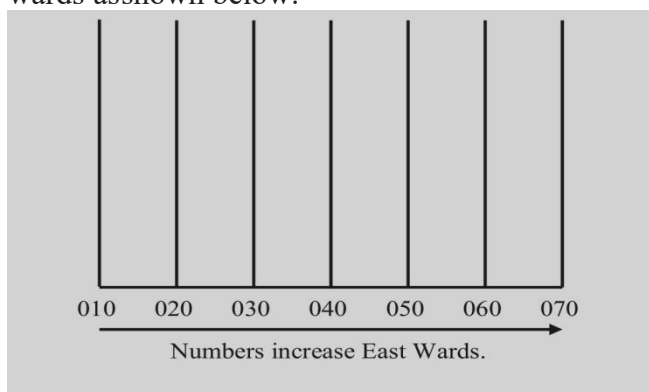


So the bearing of point Z from X as shown above from North as a starting point to the line which joins the two points is 315° North West. Important to note bearings are given in three digits even the smallest number which is less than 100° . If a figure obtained is say 45° you write it as 045° . No mark is given to some one who gives any figure in two digits.

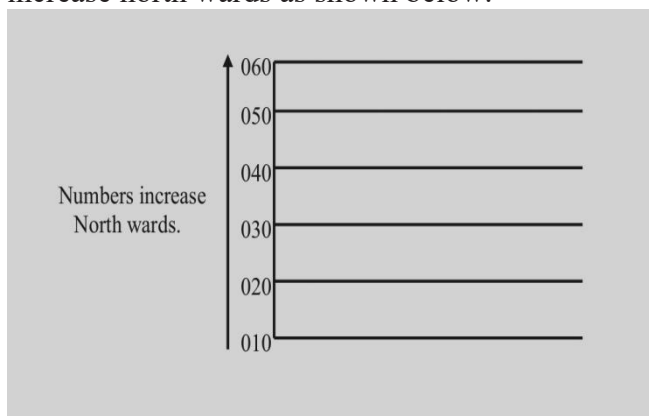
GRID REFERENCE:

This is a geographical way of locating features, areas etc on a map extract. A map of this nature consists of a network of squares called grid squares. A map consists of two kinds of grid lines, called Eastings and Northings.

- (i) **EASTINGS:** These are grid lines drawn vertically and their values increase East wards as shown below:



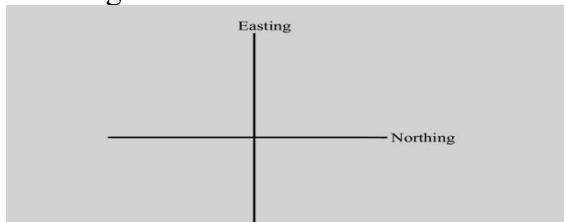
- (ii) **NORTHINGS:** These are grid lines on a map grid drawn horizontally and their values increase north wards as shown below:



HOW TO GIVE A GRID REFERENCE

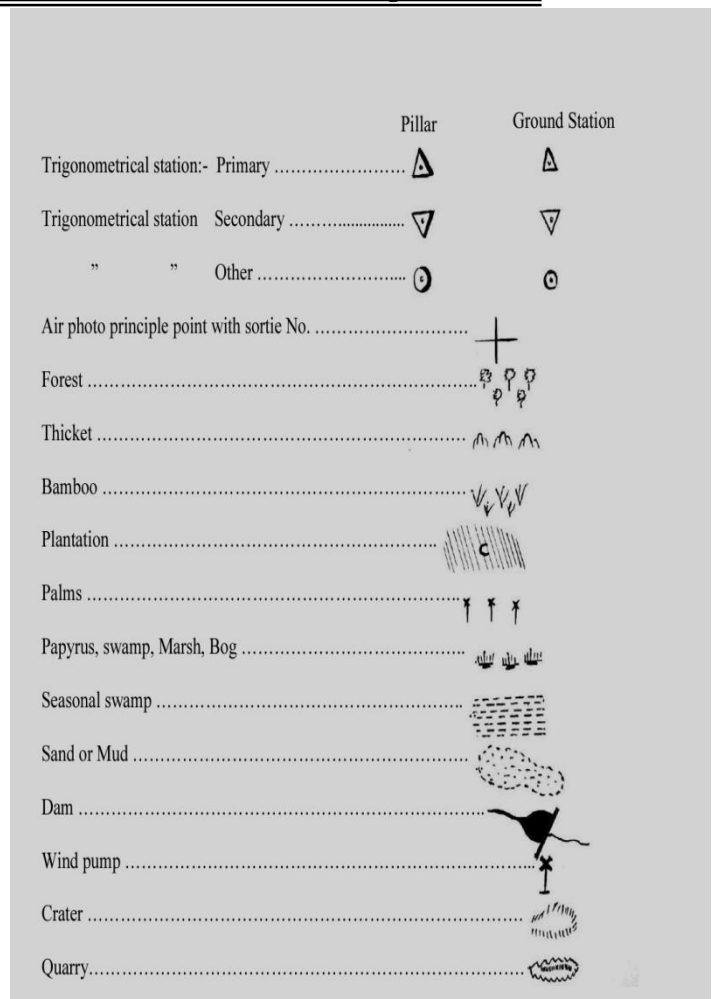
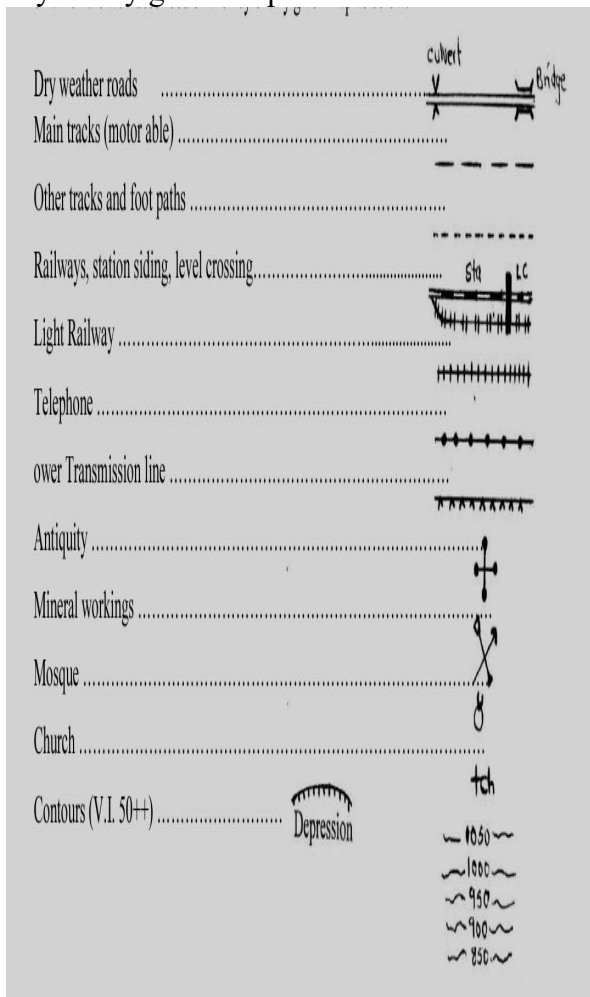
On a map extract Eastings are always read first and then followed by the northings. One must give six map reference figures i.e. three Eastings followed by three northings. The third figure in each case is an estimate of the number of the tenth eastwards for Eastings and North wards for Northings.

Below is an illustration of Eastings and Northings:



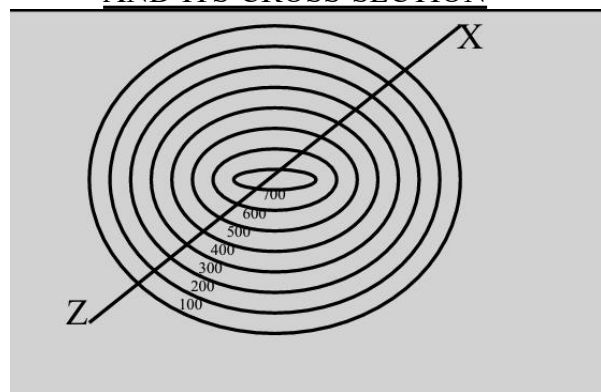
A MAP GRID

As earlier explained that a map of this nature consists of squares; This map consists of features of which are well described on the key of any given map as below:



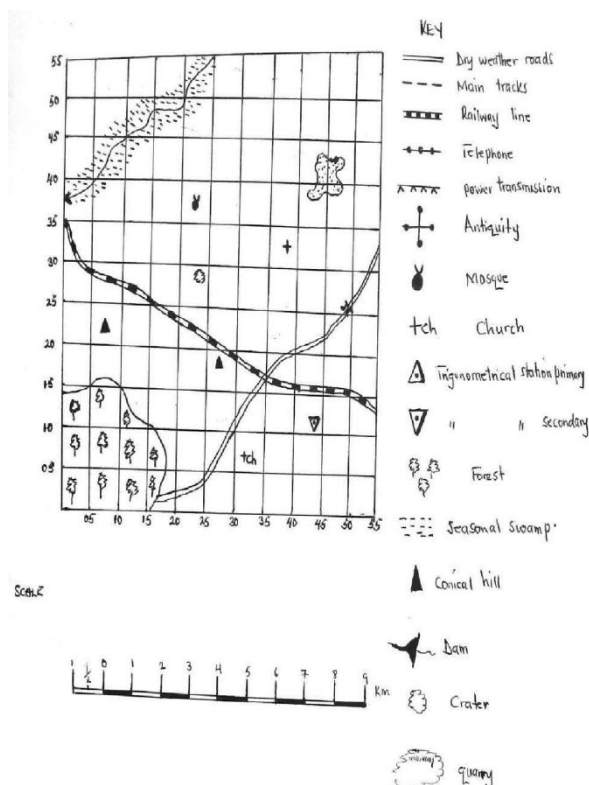
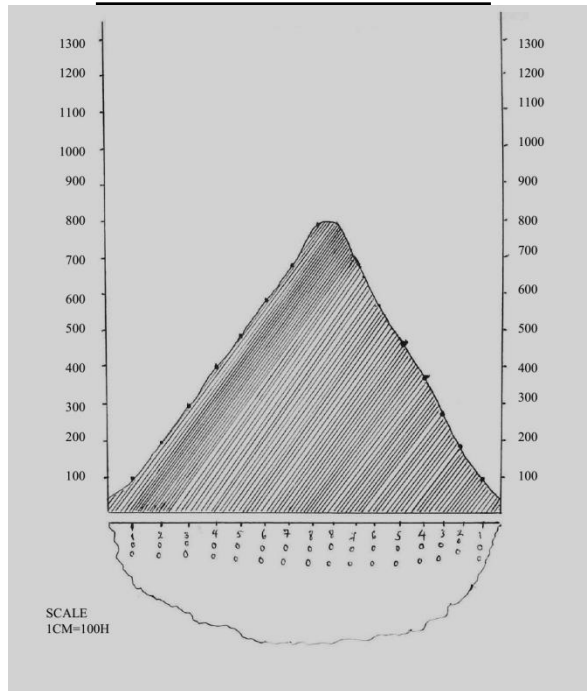
These features and symbols above are not all found on the map but can be found on each key of any map extract. If any symbol or feature is asked and cannot be seen on the map, then check for it from the key provided on the map. Some features are described by contours drawing a cross-section. Features like escarpments, dissected plateau, ridges, saddle, Col etc.

CONTOURS OF AN ESCARPMENT AND ITS CROSS-SECTION



If a cross-section of the area between Z and X is to be drawn, contours are supposed to be studied carefully, then draw a line joining the two points Z and X. Use a piece of paper to mark all contours crossed by the line as below:

A CROSS-SECTION OF THE AREA BETWEEN POINT Z AND X

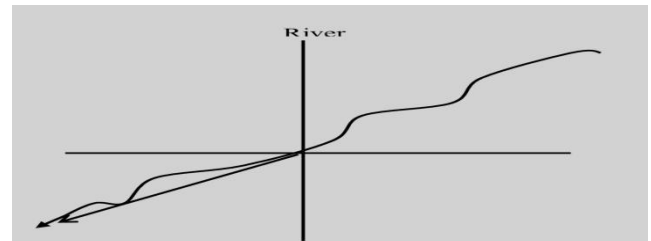


(a) If one was to give the grid reference of say a secondary trigonometrical station on the map above would do the following:

(i) Look for the area enclosed by Eastings 40 and 45 and then Northings 10 and 15. Inside the square look for the symbol representing a Trigonometrical station secondary which is Δ as per the key. Then write 40 as the figure representing Eastings line, move to the right as you estimate the third figure on the Eastings which is 8. This would give 408 as the first three digits for Eastings. Then put down 10 as the first figure representing Northings line, then move northwards estimate the third figure corresponding to that feature representing a trigonometrical station secondary which is also 4 thus giving us 104 for Northings. So the trigonometrical station Secondary is located at the grid reference 408104 on the map given above.

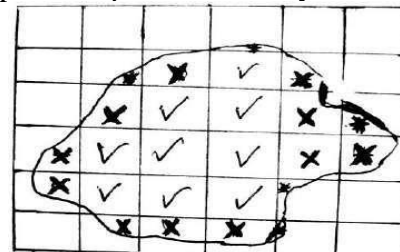
(b) If one was to give the direction of the river shown on the map above, he would do the following:

(i) Look for the river asked. Divide that river into two equal parts with a compass direction as follow then read off the direction.



As per the compass, the river shown above on the map flows South West.

(c) To give the area covered by the lake or a forest on the map, one is required to count the full squares, half squares divide by two then quarter squares divide by four as follow:



To give the area occupied by this Lake we do it as explained above.

(i) Full squares are = 9

(ii) $\frac{1}{2}$ squares are = $\frac{12}{2} = 6$

So the total area covered is $9 + 6 = 15 \text{ Km}^2$.

MEASUREING DISTANCE (ROADS OR RAILWAY LINE) ON A MAP EXTRACT

(a) ALONG A STRAIGHT LINE: If one was to give or measure any distance along a straightline would do the following:-

(i) Draw a line joining the two points say A and B. Measure the distance AB by the use of a ruler, a piece of paper or a piece of thread for long distances e.g. The actual distance is obtained by covering the distance measured in centimeters or kilometers either by a ratio scale or a linear scale as follow:

(i) RATIO SCALE:

1. Distance covered between points A and B which is say 8cm.
2. Ratio scale of the map extract is 1:50,000
3. The ratio scale above means that

$$1\text{km} = 100,000\text{cm}, \text{ So; } \frac{50,000}{100,000} = \frac{1}{2}\text{km}.$$

Therefore; $1\text{cm} = \frac{1}{2}\text{km}$

Therefore; $8 \times \frac{1}{2} = 4\text{km}^2$

4. The distance covered between points A and B when converted is 4km^2 .

(ii) THE LINEAR SCALE:

If one was to use a linear scale method, in an attempt to measure any distance covered on a mapextract, the following would be taken into serious considerations;

1. Measure the distance between say points A and B by the use of a thread or a piece of paper.
2. Transfer the distance measured to the linear scale graduated in Kilometers or miles.
3. Put the starting point at Zero then read off the end point on the linear scale.
4. Then lastly write down the actual distance in either kilometers or miles as stated on the linear scale.

HOW TO CALCULATE AREAS OF DIFFERENT SHAPES:

Areas of different shapes or figures can be calculated mathematically. Before converting

them,one needs to know the formula of some common shapes which may be met in map reading.

(i) Triangle $\frac{1}{2} \times b \times h$

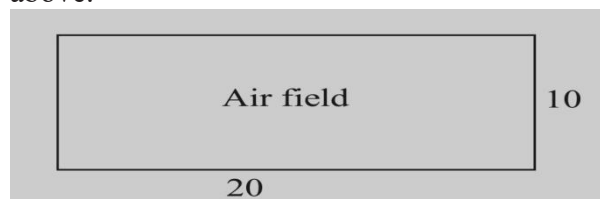
(ii) Rectangle or square $A = L \times W$

(iii) Circle πr^2

(iv) Trapezium $\frac{1}{2}(a + b)h$.

Ex

If one was asked to calculate the area of an air field below, would first look for its shape. If it is in a shape of a rectangle then would use the formula of a rectangle as shown above.



To calculate the area of the air field above, one would say; $A = L \times W = 10 \times 20 = 200\text{m}$.

SETTLEMENT PARTERNS ON A MAP

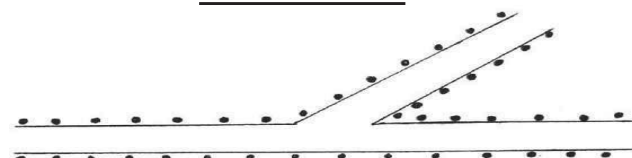
Settlement refers to the way people are distributed in an area. In East Africa, the following arethe major settlement patterns that are always shown on the map extract:

- (i) Linear or ribbon settlement
- (ii) Nucleated or clustered or grouped settlement
- (iii) Even settlement
- (iv) Scattered or dispersed settlement.

(i) Linear /Ribbon Settlement:

In East Africa, Uganda in particular this settlement is commonly found along lines of communication. Lines of communication here include roads, railway lines, rivers etc. Here people settle along these lines for purposes of carrying out trade because it becomes very cheapfor them to transport their good to and from market places.

AN ILLUSTRATION OF LINEAR SETTLEMENT



KEY:

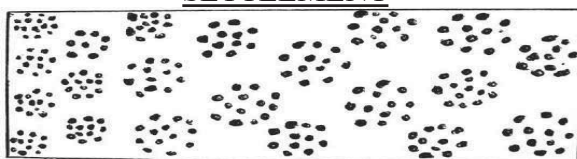
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•• %XiOW XS VKRSV DQG KRPHV.

(ii) Nucleated/clutered/compound settlement:

This type of settlement is very common in areas which are very fertile and where families do not migrate to other places because of their historical background and reasons. In Uganda this kind of settlement is practiced by the % akiga people of Kabale. This settlement is characterized by land shortage, land fragmentation, soil erosion, high population etc.

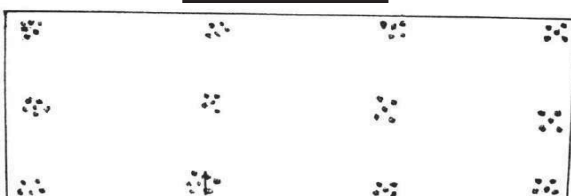
AN ILLUSTRATION OF NUCLEATED SETTLEMENT



(iii) Even Settlement:

This type of settlement is found in fairly populated areas where people are neither close nor far apart from one another. It is normally in areas of less economic production or no commercial activities taking place.

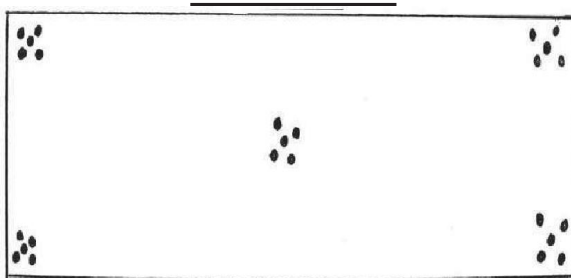
AN ILLUSTRATION OF EVEN SETTLEMENT



(iv) Scattered/ Dispert Settlement:

This type of settlement pattern is found in areas with poor soils and receives un-reliable rainfall. People in these areas are mainly cattle keepers. In Uganda, these areas are in Karamoja. These are areas which are not suitable for farming activities.

AN ILLUSTRATION OF SCATTERED SETTLEMENT



TYPES OF BOUNDARIES ON A MAP

Boundaries differ from country to country: They are either coloured or lined and below are someof the types of boundaries.

- (i) International boundaries: These demarcate borders of different countries
- (ii) Regional boundaries for regions
- (iii) District boundaries for districts
- (iv) Municipal boundaries for municipal councils
- (v) Sub-county boundaries for sub counties (Gombolola)
- (vi) Parish boundaries for parishes (Muluka).

Other boundaries include national parks, game reserves, forest reserves etc.

HUMAN ACTIVITIES (LAND USE)

Land use refers to how land is utilized by man to increase the rate of production and earn man a suitable standard of living. The following are the economic activities carried out by man. These activities on the map extract can be indicated by the following indicators:-

1. Lumbering: This is the cutting down of trees for valve timber. On a map there must first be a forest around but this may not necessarily be for the exploitation of timber. If the forest is economically exploited, there must be saw mills and roads leading to the forest.
2. Mining and quarrying: A mine is a place or an area where minerals are mined from underground by either open cast or under ground methods, while a quarry is a place where building materials such as sand, marrum, stones, soils etc are dug from underground. Symbols for mining include smelters, roasters, dressing plants etc.
3. Agriculture: Agriculture is a wide spread economic activity of the rural population. Small- scale cultivation is carried out at least everywhere. Large scale farming activities are indicated on a map by estates, ginneries, tea factories, maize mills etc.

4. Pastoralism: This is a traditional way of rearing animals. Cattle keeping is not easily seen on a map but we can still look for the following indicators for pastoralism – spray race, dip tanks creameries, milk collecting centres etc.

5. Fishing: This refers to the extraction of fish from water bodies where it is available. This activity can be identified on the map if the following are well observed. Small coast, lake shore settlement, salt works and pans are normally around the fishing areas. Methods of preserving fish such as smoking, canning, salting etc are all indicators of fishing activities.

6. Trade: This can be identified on the map when the following are noticed:-

- (i) Good communication net work
- (ii) Presence of markets, shops, trading centres, are all symbols of trade. Many towns, ports and railway station carry out trade and commerce.

7. Manufacturing: Most raw materials need to be processed before their final stage of consumption therefore; factories and processing plants are needed to manufacture them into finished products e.g. ginning, tea and sisal processing plants etc, signs of scheming are all indicators of manufacturing.

8. Communication: Roads, railways, air fields, telephone cables etc are symbols of communication and these can easily be identified and noticed on the map.

NB:

Photographing

-Capturing on film or video and still photographs.

Methods of Recording Data

-Methods of storing information to avoid losing it.

Note Taking

-Writing in a note book what is being observed, answers during interviews and then notes are compiled in school or office when writing report.

Filling In Questionnaires

-Filling answers in questionnaires which are responses from a respondent by an

interviewer or respondent himself which he/she then sends back.

Tallying

-Making 4 vertical or slanting strokes and the 5th across the 4 to record data obtained by counting or measuring similar items.

| Item | Frequency of occurrence | total |
|------|-------------------------|-------|
| A | ### | 8 |
| B | | 3 |

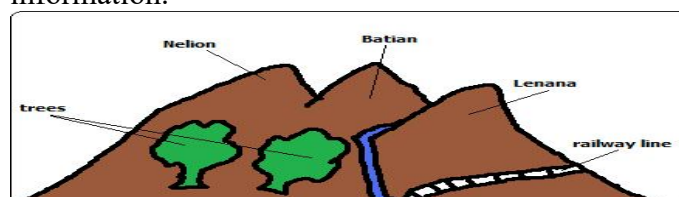
Tabulation

-Drawing of tables and filling in data systematically e.g. weather recording sheets.

| Month | J | F | M | A | M | J | J | A | S | O | N | D |
|--------------|-----|-----|-----|----|----|----|----|----|----|-----|-----|-----|
| Temp(°c) | 24 | 24 | 23 | 22 | 19 | 17 | 17 | 18 | 19 | 20 | 22 | 23 |
| Rainfall(mm) | 109 | 122 | 130 | 76 | 52 | 34 | 28 | 38 | 70 | 108 | 121 | 120 |

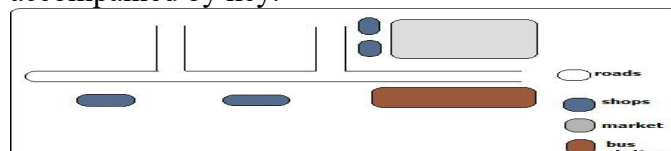
Field Sketching

-Summarising information observed in the field by making a rough drawing of landscape and labelling the essential information.



Mapping/Drawing Maps

-Drawing of a rough map of an area of study and labelling in words or symbols accompanied by key.



Tape Recording

-Recording image of an object or landscape on a film which is processed to get a photograph then the photographs are labelled to avoid mix up during storage.

Labelling samples

-Recording conversations during interviews on audio tapes using a tape recorder. Permission should be got from the respondent to record his/her responses.

Advantages

- It's used if responses are too many to be recorded on a note book.

- It allows smooth flow of discussion as asking respondents to repeat answers would irritate them.

MAPS AND THEIR USES



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