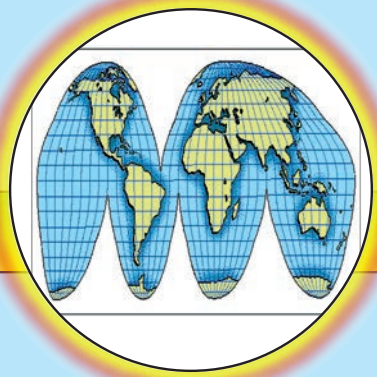
Unit 2



MAP USE AND MAP WORK

Unit Outcomes

After completing this unit, you will be able to:

- Recognize meanings, uses, conventional signs and symbols and distribution of topographic maps;
- Distinguish the properties of globe and map;
- Analyze the meaning, significance, properties and classification of map projections;
- Acquire basic skills to draw sketch maps.

Main Contents

2.1 **THE STUDY OF TOPOGRAPHIC MAPS**

2.2 **GLOBE AND MAP**

2.3 **MAP PROJECTION**

2.4 **DRAWING SKETCH MAP**

- ⇨ ***Unit Summary***
- ⇨ ***Review Exercise***

INTRODUCTION

Human beings have kept track of locations and the directions to and from them since we first appeared on earth. As we began to move from place to place, looking for sources of water and other necessities and opportunities, we began to make simple maps. All good explorers made sketches or maps as they travelled to unknown places so that their followers could either trace them or continue to achieve the desired goal.

The roots of modern map-making lie in the 17th century. Three key developments contributed to modern map making. These developments were

- *The revival of aspects of the ancient Greco-Roman civilizations during the Renaissance.*
- *The Age of Exploration and Discovery.*
- *The invention of the printing press.*

The art, science and technology of map-making is called cartography. The technology of map making has its background in the times of the ancient Greeks and Romans. They recognized the spherical form of the earth and created maps in the form of globes. In this process, they developed map projection and the geographical grid system. This technology was lost to Europe during the Middle Ages.

After the Age of Exploration and Discovery (i.e., at the end of the fifteenth century) geographers and other people became more interested in locating places. This interest led to the development of maps. These map makers developed a technique based on inserting a light within a transparent globe of the earth. As you will learn later in this unit, the light casts shadows of the globe's features on a flat surface, resulting in a map.

In this way, Europeans developed flat maps and substituted them for globes. In the 17th century, they developed the mathematical method of map making. They replaced cast shadows with mathematics as the basis of map making. With this method, they developed the concepts of parallels and meridians based on a standard set of parallel lines covering the whole globe.

In recent years, remote sensing technique has been applied for making accurate maps, monitoring the environment and conducting surveys. The need to store, process and retrieve the vast amounts of data generated by remote sensing resulted in the development of the Geographic Information System (GIS).

In this unit, you will learn about:

- *topographic maps and other types of distribution maps.*
- *map projection and its various types in making maps.*

You will also learn how to:

- *make a sketch map.*
- *locate and identify geographical elements on a sketch map.*

Start-up Activity

1 Do you know what topographic maps are?

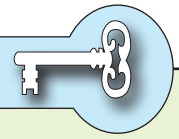
2 What is the difference between topographic maps and other types of distribution maps?

2.1 THE STUDY OF TOPOGRAPHIC MAPS

At the end of this section, you will be able to:

- Define topographic maps;
- Identify the uses of topographic maps;
- Interpret conventional signs and symbols on topographic maps;
- Realize the difference between qualitative and quantitative distribution maps;
- Translate different data into distribution maps using different diagrammatic methods.

Key Terms



- Topographic map
- Signs and symbols
- Thematic map
- Chrochromatic map
- Choroschematic map
- Chroplet map
- Isoplethic map

Although many disciplines use maps, maps have a special significance for geographers. They are geographers' primary tools for displaying and analyzing spatial distributions, patterns and relations. Because these features cannot easily be observed and interpreted in real landscapes, maps are essential to geographers.

2.1.1 Meaning and Uses of Topographic Maps

Meaning of Topographic Maps

What is Topographic map?

Topography is a Greek word made up of "topos" and "graphy." "*Topos*" means places, and "*graphy*" means writing or description. Therefore topography means the description or explanation of places.

Topographic maps are often known as *topo sheets*. Unlike other distribution maps, topographic maps, portray one or more natural and cultural features of an area. Simply, topographic maps are maps that show both human made and natural features. They can be used for various disciplines to make inferences.

Nature of Topographic Maps

A topographic map is:

- *a map that portrays rivers, streams, drainage, vegetation, roads, buildings, land uses, etc.*
- *a detailed map that shows multiple natural and anthropogenic features;*
- *a large scale map drawn to show a relatively small area; therefore, called a scenery map, too;*
- *a map that uses definite symbols, known as conventional symbols.*

Series of these maps are:

- *numbered sequentially in this format: 1, 2, 3 … 9, 10 ….*
- *each presents an area of 1^o latitude by 1^o longitude*
- *each such sheet is thus 1/16 of the international sheet. These sheets are numbered*
- *These degree sheets are numbered sequentially in this format as A, B, C, etc.*
- *The degree sheets are again subdivided into half degree and quarter degree sheets. These sheets are also sequentially numbered in this format as /ANE, /ASE,/ANW and /ASW, …..*

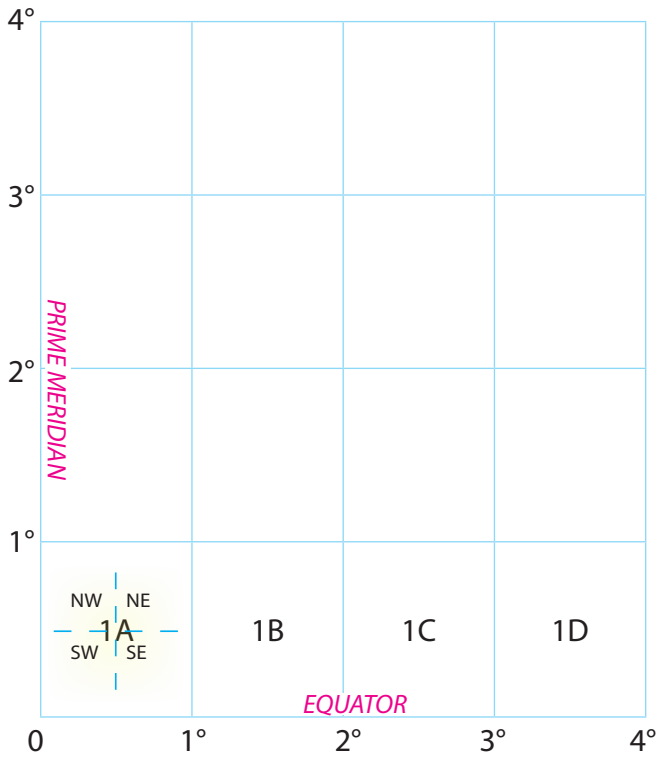


Figure 2.1: **Degree sheets**

Activity 2.1

Looking at the topo sheet of Addis Ababa in the next page,

a identify the natural features shown on it.

b identify the built-up features on the map.

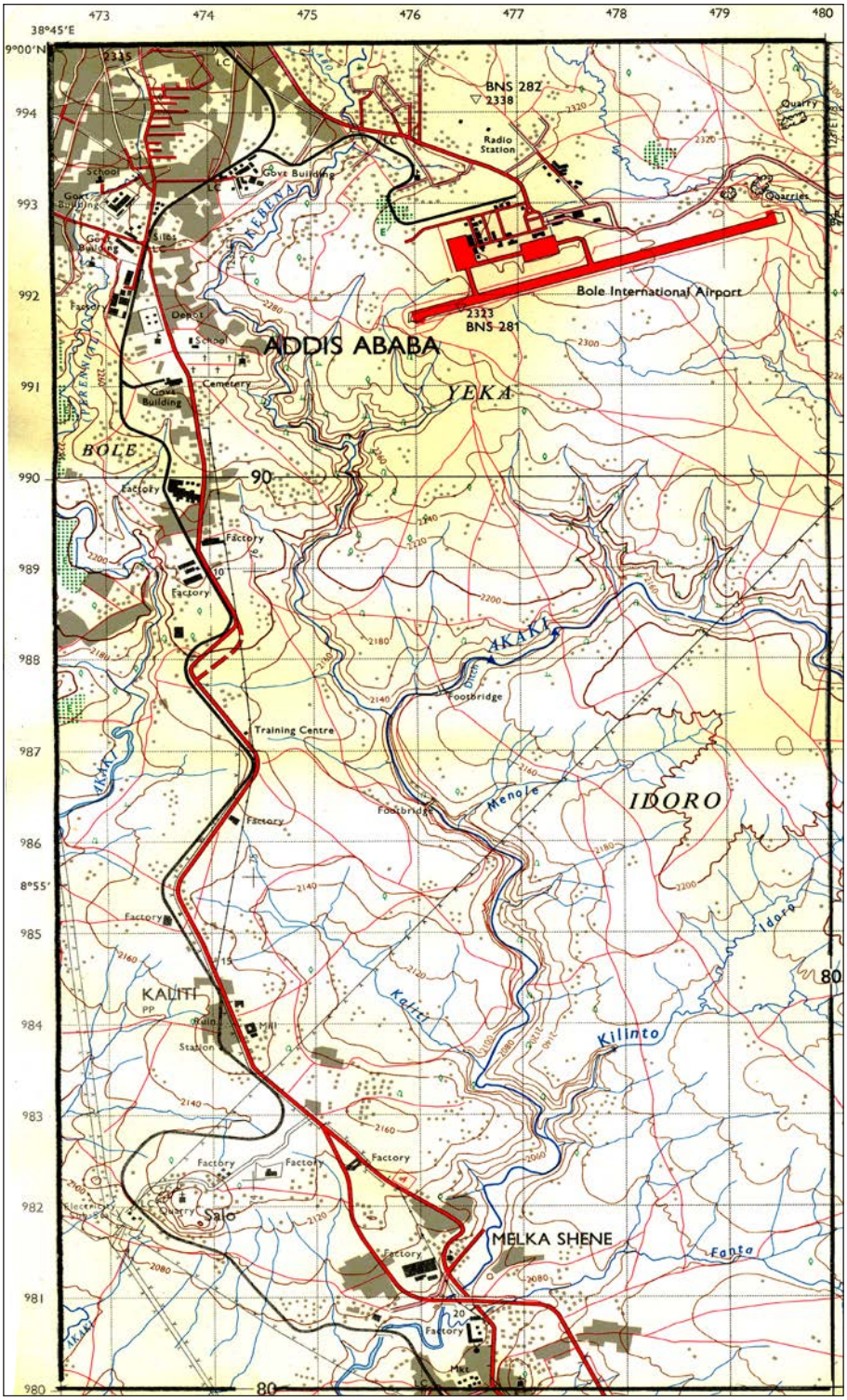


Figure 2.2: **The topo sheet of Addis Ababa at the scale of 1:50,000**

Due to the detailed information displayed on topographic maps, they are classified as **general-purpose or reference** maps. They

- *Help us to study and understand the physical aspect of the area under survey in relation to the extent that man has intervened and changed it. This enables us to understand the degree of human interference and to predict future conditions.*
- *Show the existing land forms and help us to understand the geological forces responsible for the formation of these visible land forms.*
- *Show the various natural and cultural landscapes. This function of the maps makes them helpful for socio-economic planning. They provide base-line surveying clues.*
- *Help engineers to select the right engineering design viewing the portrayed features.*
- *Act as documents for tourists, helping them to reach the places they wish to visit.*
- *Provide information about the landscape and possibly provide other information for military purposes.*

2.1.2 Conventional Signs and Symbols on Topographic Maps

What do we mean by conventional signs and symbols? Do you remember those signs and symbols you have studied in grade nine?

The skill of map reading and interpretation depends on knowing conventional symbols and signs. The signs and symbols on topographic maps are listed and explained in the map's key or legend. These symbols and signs vary in amount and kind from country to country. They can also vary within the same country, due to varying scales and areal extents.

A very good example is the set of boundary symbols used on the topographic map of Ethiopia at the scale of 1:250,000 and 1:50,000:

In the topographic map of Ethiopia, published by the Ethiopian Mapping Agency (EMA), the conventional signs and symbols are based on the devices adopted by the Doctorate Overseas Survey (DOS) Standard. Their representation is shown at the bottom of the map. The major symbols and signs are as follows.

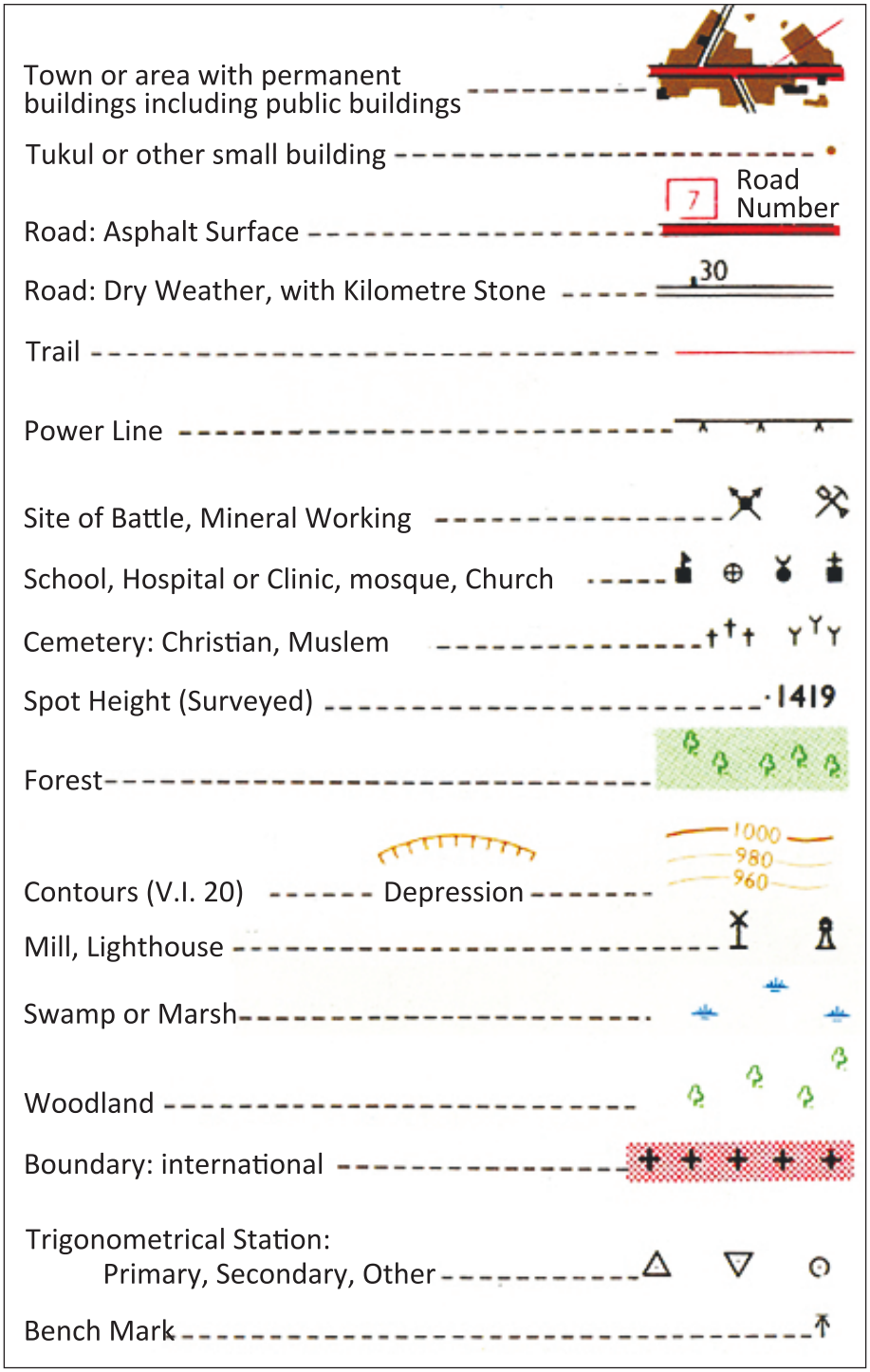


Figure 2.3: **Conventional symbols used in the topographic map of Ethiopia**

Exercise 2.1

1 Why do we say topographic maps are general purpose maps?
2 How did GIS promote the development of map-making?
3 Compare and contrast chorochromatic and choroschematic maps.
4 State the three historical events that promoted the development of map-making.

2.1.3 The Study of Distribution Maps

What does distribtuion map mean? Does it differ from cadastral and navigational maps?

The Introduction to Grade 11's geography textbook presented this concept. Try to recall what you learned about this in that text; or else refer back to the text now.

Maps are two-dimensional models of the surface of the earth. They portray the distribution of features, characters or phenomena. Many kinds of distribution maps are used world-wide. Nevertheless, we can group them into different classes based on their purposes.

In this section, you will learn about the maps in some of the categories, viz.:

- Reference or general-purpose maps
- Special-purpose or thematic maps
- Charts

Reference or General Purpose Maps

What are general purpose maps?

These maps are topographic maps that portray different features at the same time. They are made at a larger scale covering smaller areas to show details.

Thematic or Special-Purpose Maps

What are thematic maps?

These are distribution maps that emphasize the distribution of a single geographical element or character.

Example:

- ⇨ *Climatic map of Africa (Annual rainfall distribution).*
- ⇨ *Population map of the world.*

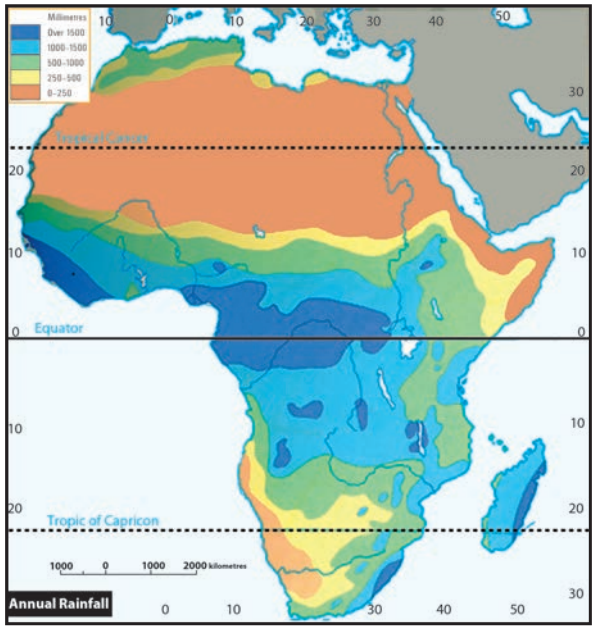


Figure 2.4: **Climatic map of Africa**

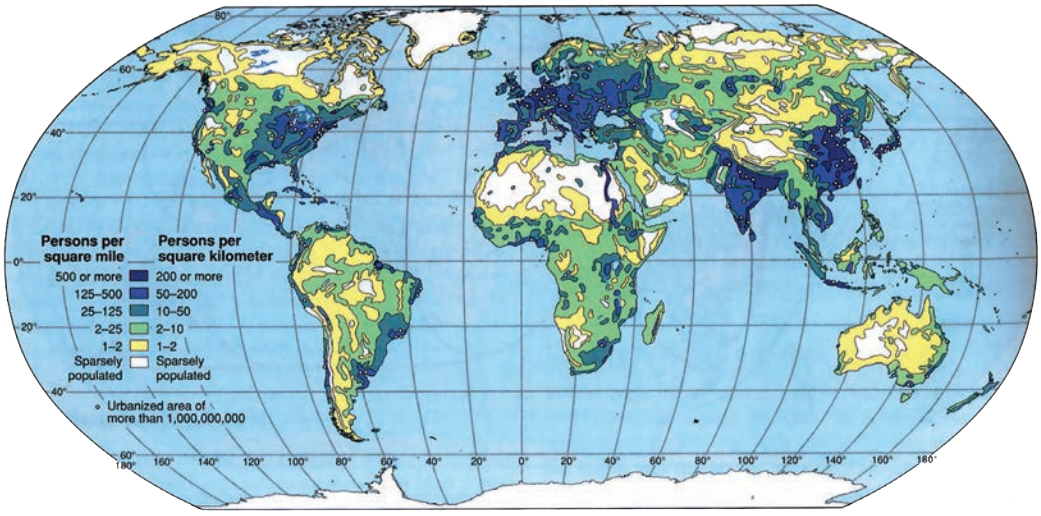


Figure 2.5: **Population map of the world**

Thematic maps are classified into two subgroups. They differ from each other on grounds of the nature of information they convey.

A Qualitative maps

B Quantitative maps

A Qualitative Distribution Maps

What are qualitative distribution maps?

Qualitative distribution maps show non-quantitative attributes. They are reclassified into these subgroups:

i Chorochromatic maps ii Choroschematic maps

i **Chorochromatic Maps:** Show the spatial distribution of geographic elements, using colour tint, shading, dots or line symbols, without attaching any numerical values.

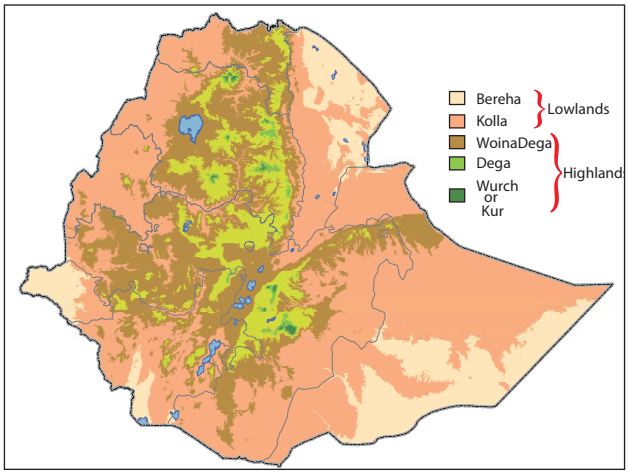


Figure 2.6: **Agro-climatic zones of Ethiopia**

ii **Choroschematic Maps:** Are qualitative maps that use pictures and letters. The pictures often symbolized are pictures of the real element. They are relatively simple to understand.

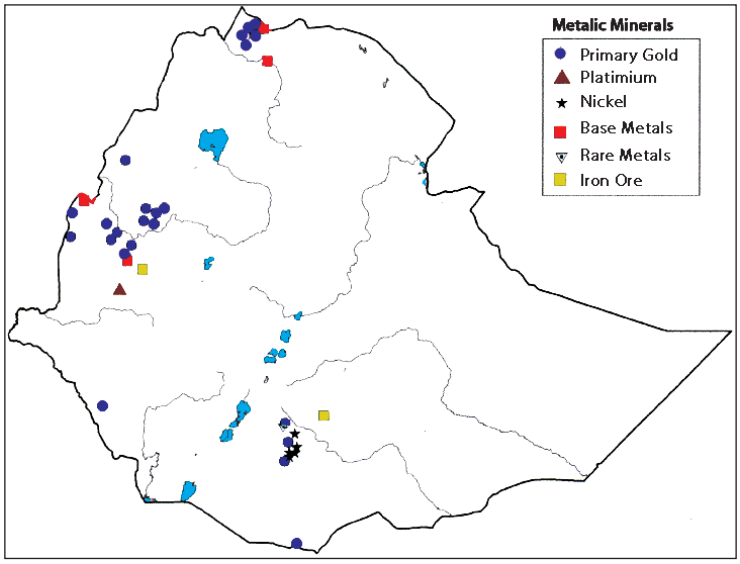


Figure 2.7: **Mineral distribution in Ethiopia**

B *Quantitative Distribution Maps*

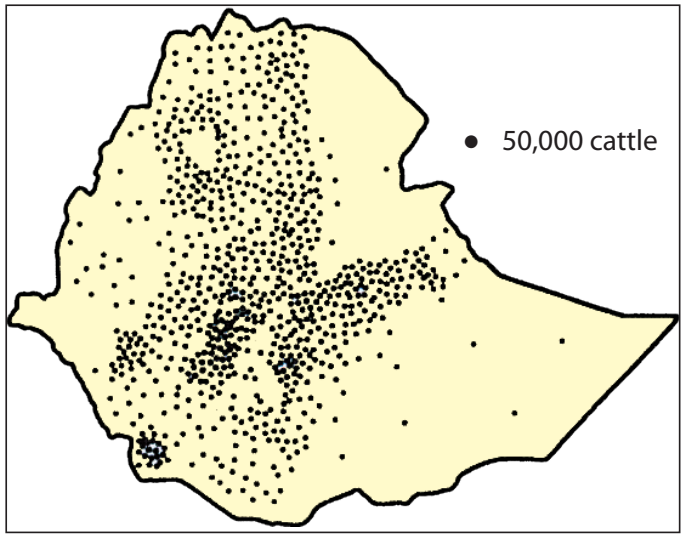
What are quantitative distribution maps?

As their name suggests, such maps display spatial distributions of geographical elements, representing quantitative values. The most commonly used distribution maps are:

i Dot maps
ii Choropleth maps
iii Isopleth maps
iv Graphs and diagrammatic maps

i **Dot maps:** In dot quantitative maps, each dot represents a given quantity or value. To create a clear and accurate dot map, you must

- ⇨ *place the dots accurately*
- ⇨ *be sure there is enough space between the dots to distinguish them*
- ⇨ *be sure all dots on the map are of the same size*



Source: *Woobeshet (2008).*

Figure 2.8: **Cattle distribution in Ethiopia**

ii **Choroplethic maps:** Sometimes they are called *shaded maps*. They display quantifiable features. Choroplethic maps are often used to show the distribution of **average values** such as population density, cropping intensity, etc. The type or intensity of the shading reflects variation in quantity.

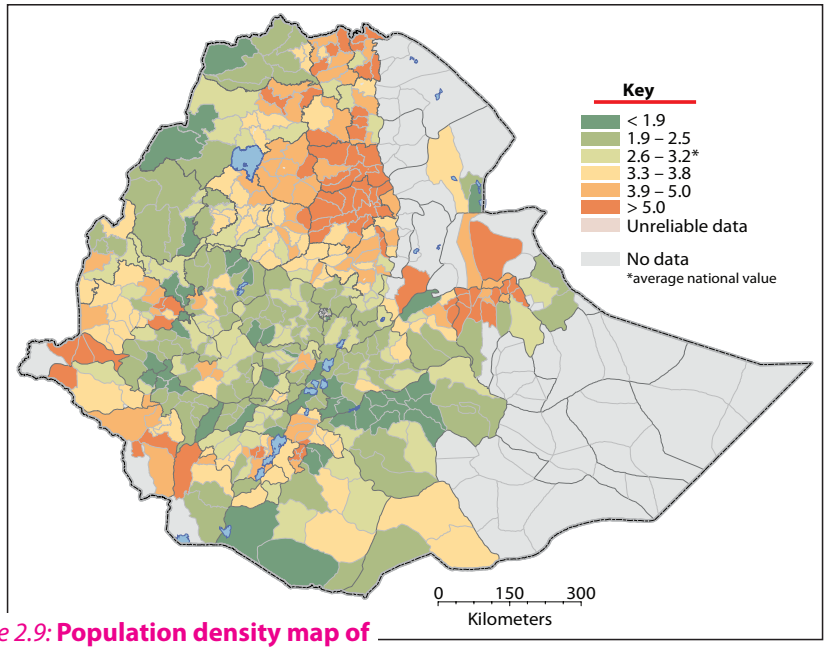


Figure 2.9: **Population density map of Ethiopia**

Source: *Atlas of the Ethiopian Rural Economy*

Note

If the intensity of the shading does not correspond to the variation in value, then the map is a chorochromatic map.

iii **Isoplethic maps:** Isopleths are lines of equal value or magnitude. The lines pass through points at which the value of a particular phenomenon is equal. Hence, isoplethic maps are quantitative distribution maps that use lines that pass through points of equal value. They are most commonly used for representing climatic elements, transportation costs, etc.

Note

Before creating an isopleth map, you must define the space between isopleths, which is their interval. Use an interval that will make the map easy to read and will allow it to contain the information you require. If the interval is very small, the lines will be close together, and the map might be difficult to read. In contrast, with a large interval, the lines will be far apart. This might limit the amount of information that the map can present.

Example:

Isotherm maps are ones that show equal temperature points.
Isobar maps are those that show equal pressure distribution.
Isodapane maps are those that show equal transportation-cost distribution.
Isohyet maps are those that show equal rainfall distribution.
Isoneph maps are those that show equal cloud cover distribution.

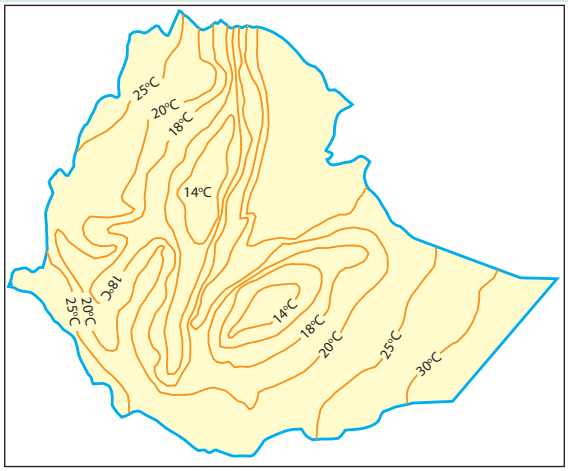


Figure 2.10: **Temperature distribution in Ethiopia** **Source:** *Geography Students text Grade 12 (2006)*

iv **Graphs and Diagrammatic Maps:** These are often, used to show economic data, population data and other quantifiable distributions.

Graphs: The simplest and most widely used graphs are line graphs and bar graphs. They are used to show the relationship between two geographic variables in time and space series.

Both line graphs and bar graphs can use a single or double format. The format depends on the items to be shown.

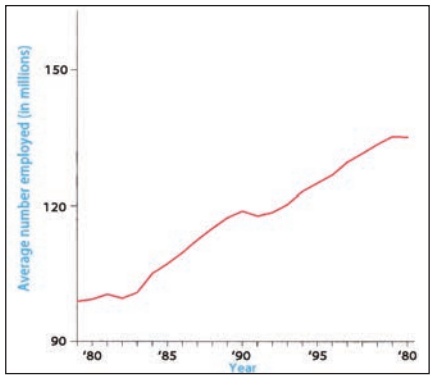


Figure 2.11: **Single-linegraph**

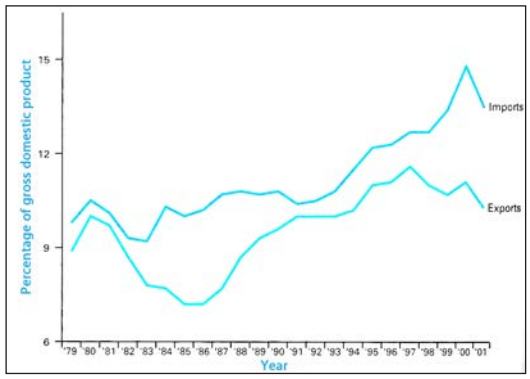


Figure 2.12: **Double-linegraph**

Diagrammatic maps: These differ from graph maps, in that diagrammatic maps are more explanatory than graph maps since they are two-dimensional or areal. These maps employ figures such as squares, circles, spheres, etc. The sizes of the figures are proportional to the values they stand for.

Example:

Using proportional squares. Proportional squares are used for making comparisons. The area of each square is proportional to the quantity it stands for.

To show distributions using proportional squares, follow this procedure:

Step 1: Calculate the square-roots of the values given.

Step 2: Let the least square root computed represent a side of the square that measures 1 cm × 1 cm = 1 cm^2.

Step 3: Compute the side of the values in an ascending order and draw the squares, using the computed square roots.

Example:

Ethiopia's H.E.P potential for:

a Gilgel Gibe is 300 Megawat

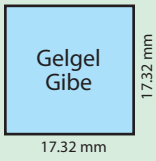
b Fincha is 100 Megawatt

c Melka Wakena is 150 Megawatt

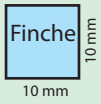
Solution:

Accordingly, the square root for:

a Gelgel Gibe $\sqrt{300}$ = 17.32 mm



b Fincha $\sqrt{100}$ = 10 mm



c Melak Wakena $\sqrt{150}$ = 12.3 mm

Use the values computed for the sides of the squares to draw the squares. The resulting different sized squares represent the different H.E. Potentials of the rivers.

Proportional Circles and Proportional Arrows

Proportional circles and proportional arrows are one of the various diagramatic techniques for showing economic data, population size, etc. They can be used for comparative studies of different geographical aspects.

Likewise, a circle can be also drawn to show the proportional share of individual components (piechart). For drawing proportional circles, a suitable value (i.e., the least value being represented by 1 centimeter) is selected and radii of circles for representing different values or magnitudes are calculated.

Note

1 centimeter is called the supposed radius of the circle and that represents the selected (least value) number. Based on πr^2 and computed r_1 different sized circles will be drawn.

Example:

Major commodity exports of Ethiopia in 2004/05 (Source NBE)

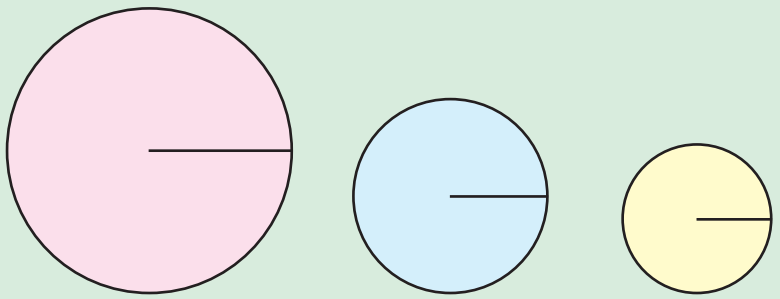
Coffee 126100 tons, pulses 66200 tons, oil seeds 83000 tons

Let the export of pulses' (66200 tons) radius be (supposed radius) = 1 cm

Then, we calculate others' radii based on 1 cm radius.

$$\text{Coffee} = \frac{126{,}100 \times 1\text{cm}}{66{,}200 \text{ tones}} = 1.90\text{cm}$$

$$\text{Oil seeds} = \frac{83{,}000 \text{ tones} \times 1\text{cm}}{66.200 \text{ tone}} = 1.3\text{cm}$$



Coffee = 1.9 cm Oil seeds = 1.3 pulses = 1 cm

Similarly, proportional arrows of varying thickness can be used to show different magnitudes or flows. Often, proportional arrows are used to portray the degree or volume of movements of goods, traffic flow, migration of people, direction of exports and imports, etc.

Figure 2.13: **Arrow map**

2.2 GLOBE AND MAP

At the end of this section, you will be able to:

- compare and contrast the properties of globes and maps.

Key Terms

- Globe
- Spheroid
- Meridians

What is a map?

Maps and globes are very important tools that geographers use in order to show geographic facts.

They differ from each other in what they can portray and how they portray this information.

Properties of a Globe

What are the particular properties of a globe?

- *Globes are the most appropriate models for representing the surface of the earth because they are spherical.*

- *The scale on the surface of a globe is identical over all of its surface.*
- *All meridians and parallels on a globe intersect at right angles.*
- *All meridians converge at the poles.*
- *All parallels are parallel to the equator and to each other.*
- *Parallels decrease in length as they approach the poles.*

Advantages of a Map Over a Globe

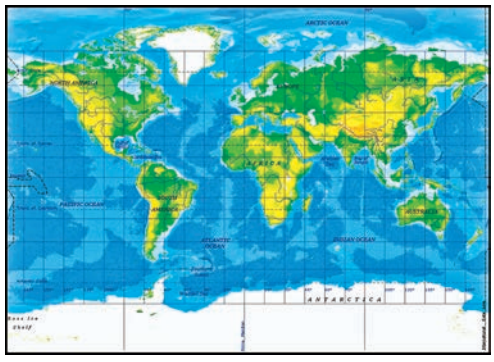
What are the advantages of a map over a globe?

Maps are used more frequently than globes, particularly in the classroom and in fieldwork.

If a globe is a more accurate representation of the earth than a map, why do we often prefer maps to globes? The answer is that:

- *Globes are expensive to reproduce and update, but maps are not.*
- *Globes are not easy to fold and handle, but maps are.*
- *Globes must be rotated to show the entire surface of the earth, and they are not convenient for showing locations and distributions over very large areas. With a map, you can immediately see the whole of any area shown on it.*
- *Most globes are less than one meter in diameter and therefore are too small to provide detailed information*
- *Globes are not visually convenient, but maps are.*

Therefore, maps are usually preferred over globes in geography.



a) *Map*

b) *Globe*

Figure 2.14:

Now we consider the case of transferring information from a spherical surface to a flat one – in other words we treat the manner how we can create a map, which

is two-dimensional, from the surface of the earth, which is spherical. We use a *remedial device, map projection.*

Activity 2.2

1 Prepare a globe and a map and present it on the table for discussion

2 By looking at these tools, attempt to characterize each item. And then identify the draw-backs for each tool.

Exercise 2.2

I ***Choose the best answer among the given alternatives***

1 Which of the following types of map is appropriate for showing settlement, drainage, roads and land use distribution on a single map?

A Thematic map
B Topographic map
C Cadastral map
D Navigation map

2 Which of the following truly expresses the nature of topographic maps?

A They are small-scale maps.
B They can be drawn at varying scales.
C The symbols and signs used in all topo-maps are consistent.
D A and B.

3 In a thematic distribution map

A only one geographic element is portrayed.
B settlements and graticules are shown.
C a number of features can be shown very neatly.
D Both human made and natural features are shown clearly.

II ***Short Answers***

1 Enumerate the differences between topographic and thematic maps.
2 What are the advantages of maps over globes?
3 List the marginal information in the topo sheet of Addis Ababa that uses the scale of 1:50,000.
4 What precautions must the map-maker of these types of maps observe?

a Dot map
b Isoplethic map

2.3 MAP PROJECTION

At the end of this section, you will be able to:

- define map projection;
- discuss the significance of map projection;
- identify the properties of map projection; and
- demonstrate cylindrical, conical and zenithal map projections.

Key Terms

- Map projection
- Homolographic
- Orthomorphic
- Azimuthal
- Cylinderical
- Equal-Area
- Conformal
- Equidistant
- Zenithal
- Conical
- Polyconic

2.3.1 Meaning and Significance of Map Projection

What does map projection mean? What is its significance?

We are quite sure that you can define what a map is and tell what its significance is.

Meaning of map projection: Map projection is a technique that cartographers use to transfer information from a globe to a flat surface in order to create a map.

Cartographers developed map projection as they tried to solve the problems that globes presented. The end result of their efforts was to produce an alternative tool – the map.

Depicting various types of data on a map is the chief objective of a cartographer. This demands the establishment of basic information (like grid references, boundaries, etc.) on the required map. The acquiring of this basic information in turn demands map projection. In this way, map projection becomes very significant so that data and other geographic elements will be depicted in their appropriate place.

2.3.2 Properties of Map Projection

Is map projection a perfect technique of transferring all the information portrayed on a spherical surface onto a plane surface?

No type of map projection is free of distortion. Because cartographers must make choices when they decide to pick a projection, they begin by asking themselves questions like the ones just below:

The task of representing a spherical surface on a plane surface is complicated. There is no way to preserve accuracy. This is because there is no way to cut up the surface of a globe that would allow it to lie flat on a piece of paper. The spherical surface would tear if you tried to spread it out onto a perfectly flat surface.

Therefore, transferring the graphics on the surface of a globe to a flat surface always results in distortion in the graphics. Distortions in one or more of the following properties always occur.

- *area*
- *distance*
- *shape*
- *direction (angle)*

If you maintain the accuracy of one of these features, some or all of the others will be distorted. Therefore, there is no projection type that provides an absolutely perfect representation of the earth on a flat surface.

A surface, such as that of the earth, that cannot be converted into a flat surface without distortion is called an *undevelopable surface*.

Here are some commonly used types of projections. Each maintains accuracy in one of the features by sacrificing accuracy in others.

- *homolographic projections maintain accuracy of **shape**.*
- *orthomorphic projections maintain accuracy of **size**.*
- *azimuthal projections maintain accuracy of **direction**.*

Considering the information that I want to present on my map,

- *what property do I want to preserve?*
- *what properties are less important?*

Then choose from among the properties listed earlier: i.e, area, shape, distance, direction (angle).

2.3.3 Geometrical Map Projection

What does the term geometrical map projection mean? Does it have relationships with the geometrical figures?

As you know, map projection is a device of representing a sphere surface on a flat and plane surface. This involves a difficult task since the spherical surface the globe-cannot be cut and opened into a perfectly flat surface. However, there are some geometrical surfaces that can cover the globe partially and they can be cut open into flat surfaces. By covering a globe of glass (that illuminates from inside) with such a surface (developable surface), the shadows of parallels and meridians can be traced onto the paper and then be open into a plane surface.

When creating projections by casting shadows onto a developable surface, we capture the pattern of the shadows on the surface and then flatten the surface.

Here are some commonly used projections that are based on the shape of the developable surface. Some of them have sub-categories.

- cylindrical
- conic (cone)
- planar (plane) – also known as azimuthal

I *Cylindrical Projections:*

What do you mean by cylindrical Projection? Where does the cylinder tangent the globe?

Have you seen balls kept in a cylinder? The cylinder tangents the balls at both sides. A very simple example is the keeping of table tennis balls in their cylindrical package.

Cylindrical projections are best suited for the projection of tropical regions since deformities increase polewards.

Cylindrical projection are obtained with the help of a cylindrical developable surface. The cylinder, which is wrapped around the globe tangent to the cylinder, is tall enough to parallel both sides of the equator.

After the data have been captured on its surface, the cylinder is removed from around the globe, and is cut open and flattened to create a rectangular plane surface.

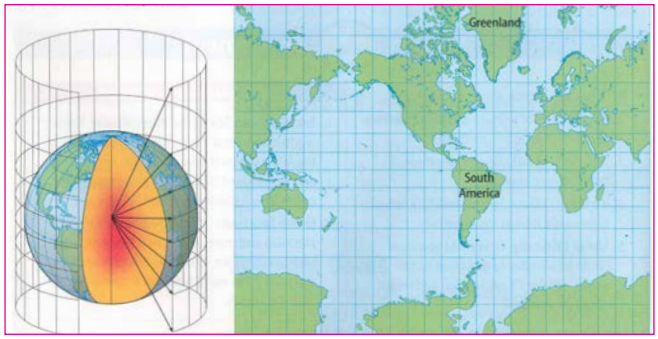


Figure 2.15: **Cylindrical Projections**

Characteristics of Cylindrical Projection

- ⇨ *Parallels and meridians in such a projection are straight lines intersecting at right angles.*
- ⇨ *The lines tangent to the developable surface are true to scale.*
- ⇨ *All parallels are equal in length to the equator.*
- ⇨ *Distortions increase polewards from the equator.*

II *Conic Projection:*

What does conic projection mean?

This is obtained by covering the globe with a cone-shaped developable surface. The cone is placed tangent to the globe along one, two or more parallels, with the apex of the cone located above a pole.

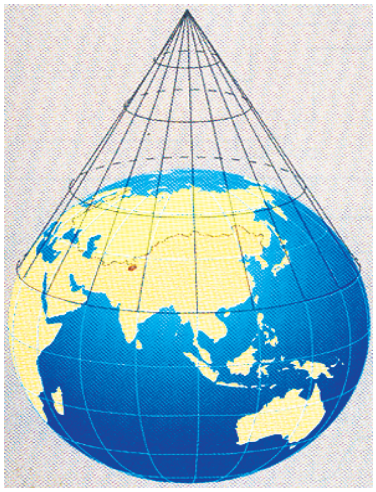


Figure 2.16: **Conic Projection**

Characteristics of Conic Projection

In such a projection:

- ⇨ *Parallels make arcs of concentric circles.*
- ⇨ *Meridians are straight lines radiating from the pole.*
- ⇨ *The parallel tangent to the cone is true to scale. It is known as the standard parallel (sp).*

- *Distortions increase as parallels move away from the standard parallel.*
- *Conic projection cannot be used to show worldwide distributions. Maps created with conic projections are mostly restricted to maps of mid-latitude regions so that the area being investigated does not extend very far to the north or to the south. Hence, it can be argued that if two standard parallels could be selected, an area that includes more of the north-south directions could be represented.*
- *Linear features, such as transcontinental railways and forests, for example, coniferous forest regions, can be depicted accurately.*

III *Zenithal Projection:*

It refers to overhead position, that is perpendicular.

This projection is also known as *Azimuthal projection.* True distances and directions in such projection are retained by placing a developable surface at one of the poles see Figure 2.17 below.

Figure 2.17: **Zenithal Projection**

Characteristics of Zenithal /Azimuthal Projections

In such projections:

- *Parallels are concentric circles.*
- *Meridians are straight lines radiating from the poles.*

What is more:

- ⇨ *Planar projections produce circular maps.*
- ⇨ *Planar projections are very much suited to maps of polar landmasses (high latitude regions).*

Activity 2.3

In your group, work out what the following instructions ask you to do in the form of discussion:

1 Compare and contrast globes and maps.

2 Describe geometrical projection.

2.4 DRAWING SKETCH MAP

At the end of this section, you will be able to:

- define what a sketch map is;
- explain the purpose of drawing sketch maps;
- discuss the guidelines for making good sketch maps; and
- draw a sketch map of a given area.

Key Terms

- Sketch map
- Landscape
- Boundary
- Location
- Route

2.4.1 The Meaning and Purpose of Sketch Maps

What are the basic differences between a sketch map and a conventional map?

A sketch map is a freehand drawing that attempts to simulate real features. It is an important tool in fieldwork.

The main purpose of a sketch map is to retain required features in field observation with their relative locations and sizes.

We use a sketch map for its following characteristics:

- *It can be drawn quickly.*
- *It is a guideline.*
- *It is easily recognizable.*
- *It provides skills for roughly showing or recording landscapes.*

We do not use a sketch map if its following drawbacks become significantly disadvantageous to our goals:

- *It does not have scale.*
- *It is crude.*
- *It can be both misleading and clumsy.*

2.4.2 Basic Guidelines for Making Good Sketch Maps

What is the first step employed in the making of a good sketch map?

Sketch maps allow geographers to record information very quickly as they prepare for complex tasks. They use many types of sketch maps, including maps that show location, route and landscape.

Here are guidelines for creating good sketch maps.

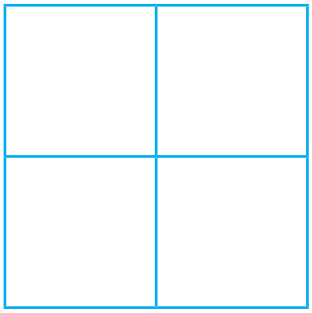
- *Choose an area to sketch that will be manageable for you as you create the sketch map and that will be easy for you and others to understand when the map is complete.*
- *Select the important frames of reference for the area.*
- *Create a complete mental picture of the sketch map that you will make. As you plan the map, remember the features that you want and interest you, for instance, such features as:*
  - *appear in proportion to the map as a whole and to each other*
  - *correct placement so that locations could be recognizable in relation to:*
    - ✓ *each other,*
    - ✓ *the map's boundary,*

- ✓ *the lines you draw to segment the map into rectangles or squares,*
- ✓ *simplicity in recognition.*

⇨ *Create the map's boundaries. Be sure that the final boundary allows you to place the features appropriately. You want them to appear in proportion to the map as a whole and to each other. You also want their locations be recognizable in relation to each other and to the boundary.*

⇨ *Divide the edges of the boundary horizontally and vertically to create a temporary grid of squares or rectangles. Plan them carefully so that you can use them to place the features as accurately as possible on the map.*

Boundary



⇨ *Using a sharp 2HB pencil, a ruler and a soft rubber eraser, begin sketching. Use simple lines or symbols to present the map's features. Do your best to present the features clearly and neatly.*

⇨ *Erase the quadrant lines or dividing lines after finishing the sketch.*

⇨ *Annotate your sketch map by including important marginal information such as its title, key, and northings.*

2.4.3 Producing Sketch Maps

Do you know that sketch maps also vary in type?

It is a fact that geographers use many types of sketch maps. Here are examples of three types:

- ➲ location
- ➲ route
- ➲ landscape

A *Location Sketch Maps*

These are often used to show the relative location of built-up areas, vegetation, human-made features, etc. An example of this is shown in Figure 2.18.

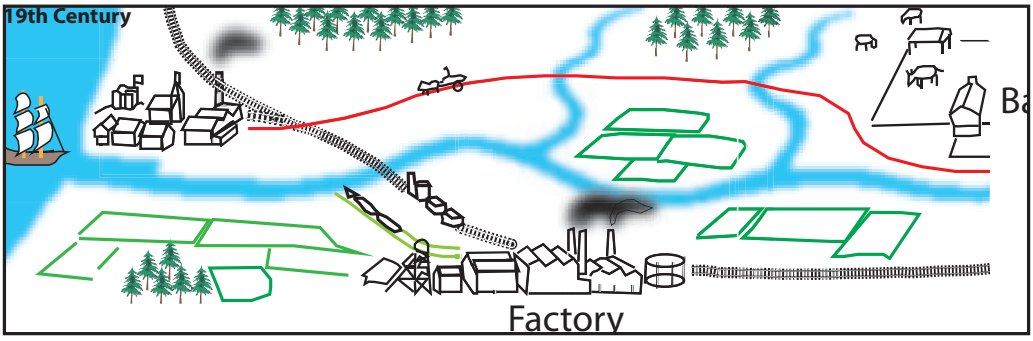


Figure 2.18: **A village**

When you look at the figure, notice the relative locations of the forest, school, farm, factory etc.

Activity 2.4

Based on your understanding of the sketch map (Figure 2.18) workout the following.

1. If the distance between the ship and the factory is 500 meters on the ground, define the scale for this sketch map. What is the scale in R : F?
2. If the left margine shows the N-S direction, what is the direction of the
   a. ship from the factory
   b. barn from the mouth of the river
3. Identify the part of the map in which the forest is shown.

B *Route Sketch Map*

What distinguishes route maps from location or landsketch sketch maps?

Route sketch maps are useful for finding one's way around a new place. They are frequently used by tourists, travelers and people who have recently been relocated to a new area. These people might use maps of cities and large towns to help them spot the places that they visit; for instance, offices, stations, clinics and the like.

Activity 2.5

Assume that the following route sketch map concerns you all. Then look at the sketch map (Figure 2.19) and perform the following activities.

1 Identify the location of the Ministry of Education in relation to Miazia 27 square of the city.

2 Describe the routes that take you to
   - a Sidist Kilo
   - b Birhanena Selam Printing Press
   - c Commercial Bank

3 Is it possible to use route A to go to the school? If yes, in what direction would you go?

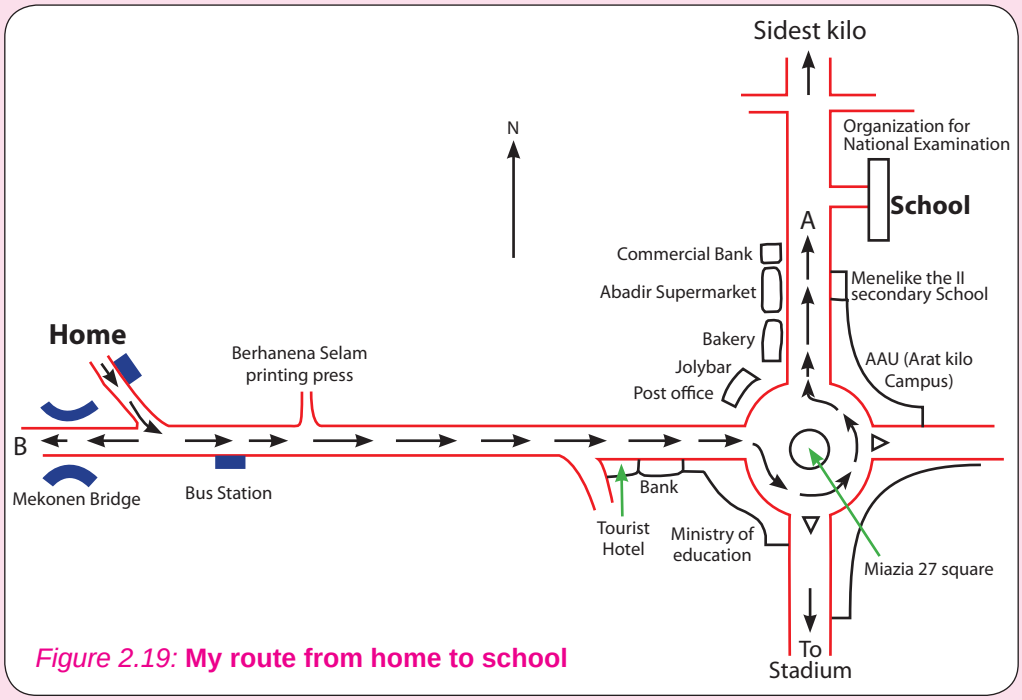


Figure 2.19: **My route from home to school**

C *Landscape Sketch Maps*

These are field sketches used to show surrounding areas. These maps could be drawn from topographic maps, aerial photographs or from direct field observation.

Example:

a) *Aerial photograph*

b) *Sketch map*

Figure 2.20:

Activity 2.6

Students, after this lesson, arrange for one Saturday or Sunday, to make an educational trip to a nearby out skirt. Decide to make the sketch map of a selected view. Do not forget to apply the basic guidelines and decide the type of sketch map you want to prepare . Finally show it to your teacher and get comments.

Unit Review

UNIT SUMMARY

- Based on their purpose, maps are classified into topographic and thematic maps
- Topographic maps are detail maps as well as general purpose maps. They show both natural and human-made features. Because of this, they are used as inferences.
- In order to understand and interoperate topographic maps, it is necessary to know the conventional signs and symbols used on topographic maps.
- Unlike topographic maps, thematic maps show only one geographic element at a time. Hence, they cannot be used as inferences.
- Thematic maps are again reclassified or subdivided into qualitative and quantitative distribution maps. Qualitative distribution maps show non-qualitative attributes, while the quantitative distribution maps show geographical elements representing quantities.
- Qualitative distribution maps use colors, shades, symbols and letters to show distribution.
- Quantitative distribution maps use colors, shades, symbols and letters to show distribution.
- Quantitative distribution maps use graphs, dots and proportional figures to show distributions.

REVIEW EXERCISE FOR UNIT 2

I *Choose the best answer among the suggested alternatives.*

1 Topographic maps are described as scenery maps, because they:

A are written in block letters
B show detail information
C show the whole parts of the earth
D are true to scale

2 Thematic maps are different from topographic maps. Their differences lie in

A purpose
B scale
C areal coverage
D all of the above

3 Which standard colour is wrongly associated?

A brown-relief
B blue-water bodies
C green-vegetation cover
D yellow-urban centres

4 Which of the following features is not included in the topographic sheet of Addis Ababa?

A roads
B settlements
C built-up areas
D weather and climate

5 Which of the following maps are used to show population density?

A Isoplethic maps
B Flow maps
C Chroplethic maps
D Chorochromatic maps

6 The most suitable map projection for the tropical areas is

A Cylindrical equal area projection
B Azimllthal projection
C Conic equal area projection
D B and C

II *Short-Answer Questions: Provide brief descriptions for the following.*

7 State the contrasts between thematic and general purpose maps. Give one example for each.

8 Distinguish chorochromatic maps from chroplethic maps. Give two examples for each.

9 What is the distinction between a conventional map and a sketch map?

10 What factors necessitate the use of map projection techniques?