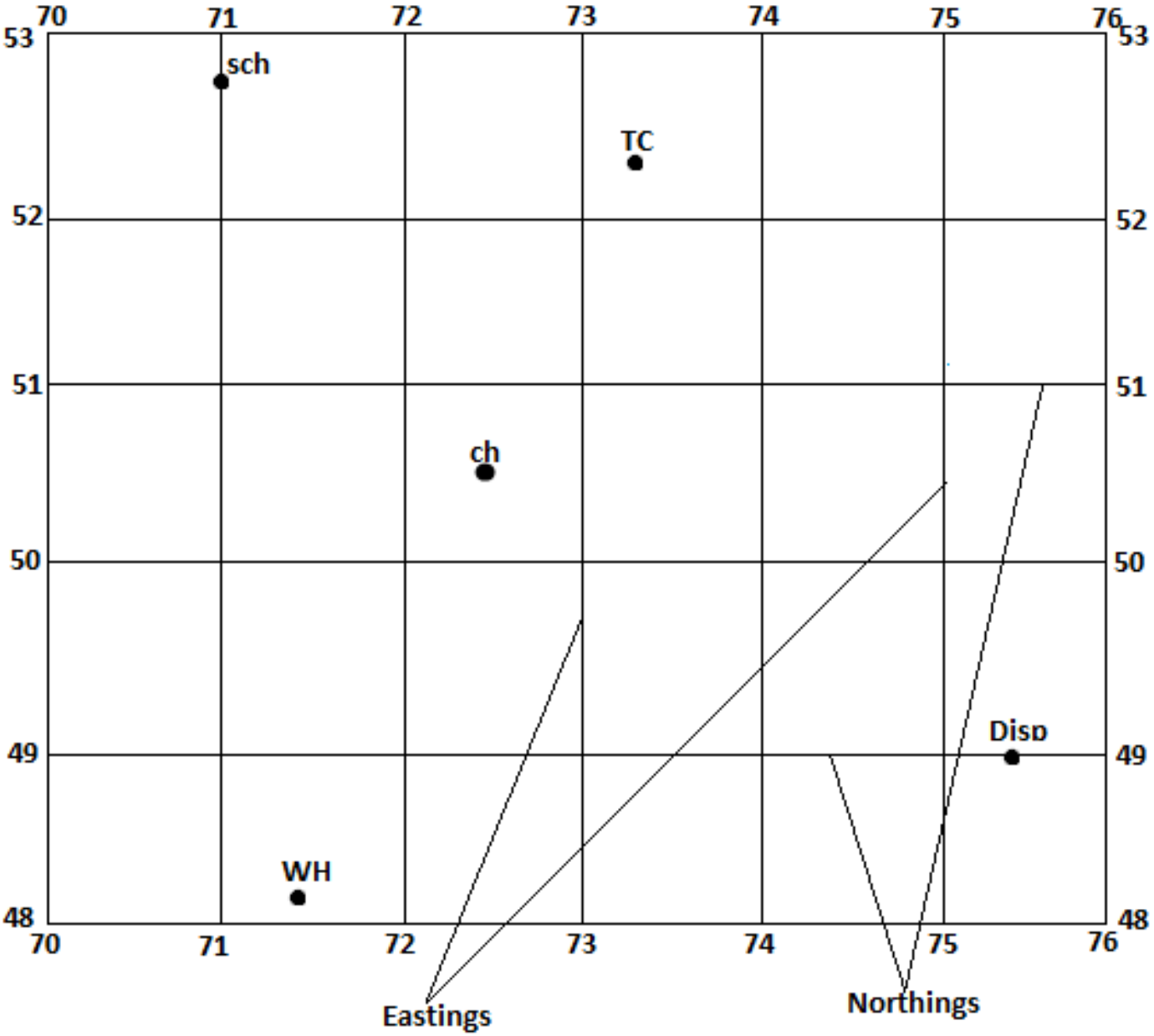
MAP - READING

1. GRID REFERENCE

- Is the position of a place expressed in Eastings (vertical lines) and Northings (horizontal lines) on a topographical map.
- This can be done by giving the Eastings (first) and the Northings (last) in 4 or 6 figures.



Examples ;

Church (ch): 724505

School (sch): 710527

Identify the grid reference of;

a) Water hole(WH) ;_____

b) Dispensary (Disp) ;_____

c) Trading centre.(TC);_____

2. CALCULATING AREA OF IRREGULAR FEATURES (forests,lakes, swamps)

Area of a lake = Number of full squares + No. of half squares.

2

For example ; Full squares = 2 squares , Half square = 14 squares.

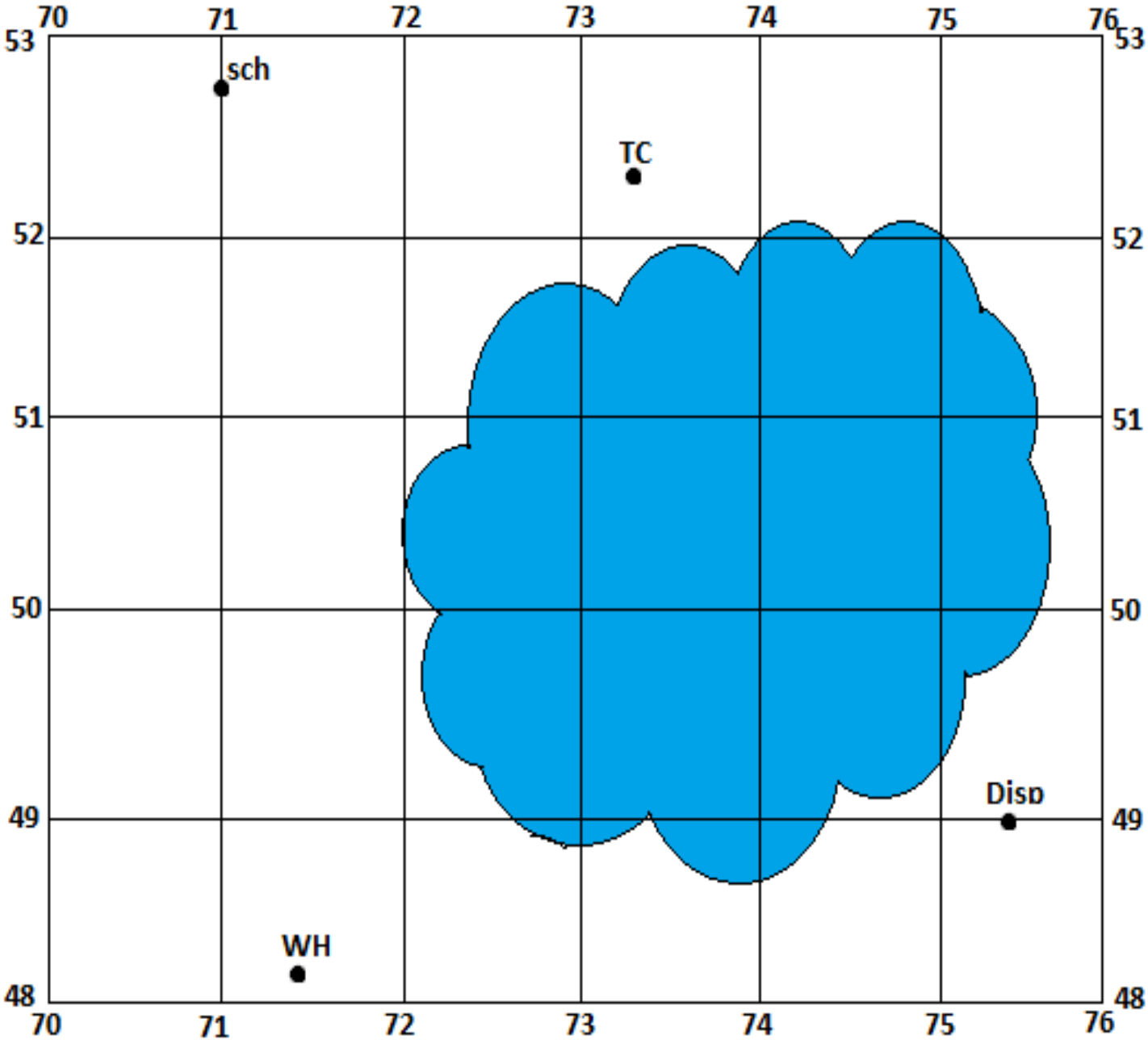
$$2 + \frac{14.}{2} = 9 \text{ squares.}$$

then let 1 square = 1km (width) x 1km (length)

$= 1 \times 1 = 1km^2$

Then Area of lake / forest = 9 squares x $1km^2$

Area of a lake / forest = 9 km^2



3. STATING THE BEARING OF ONE PLACE FROM ANOTHER

Procedure ;

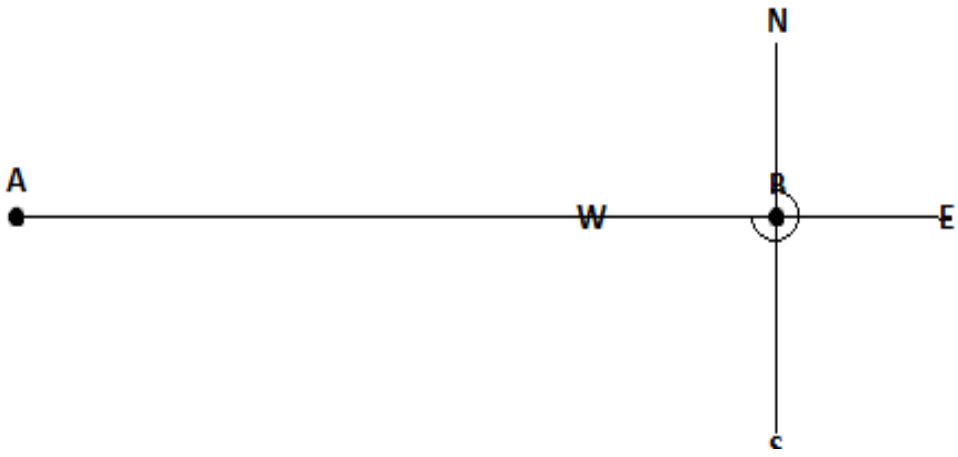
- Mark the two points in question, e.g A and B.
- Draw a straight line to join the two the 2 points in question.

- Draw a compass at the second point.
- Draw an arc from the north clockwise up to the line joining the 2 points.
- Use a protractor and measure the angle clockwise made by the arc.
- Give the answer in 3 figures e.g 060^0 or 270^0 or 090^0 or 283^0.

Example : What is the bearing of A from B.

The bearing of A from B is 270^0.

4. STATE THE DIRECTION OF ONE PLACE FROM ANOTHER.



The direction of A from B is West

5. IDENTIFYING THE ECONOMIC ACTIVITIES IN THE AREA SHOWN ON THE TOPOGRAPHICAL MAP.

You are required to give evidence for any economic activity on the map and evidences include:

Economic activity	Evidence, local name and direction on the map.	Direction in terms of location of the activity
Transport	Presence of roads/railways	in the south/north of.....
Mining	Presence of sandpits, quarries, clay pits	in the north east of....,...
Forestry	Presence of forests/forest reserves.	in the south of.....
Lumbering	Presence of sawmills or transport routes ending in forests.	at.....in the..... direction.
Farming	Presence of plantation farms or evenly distributed settlements.	at.....in the..... direction.
Pastoralism	Presence of quarantine areas, water holes,boreholes for livestock.	at.....in the..... direction.
Fishing	Presence of a landing site/harbor.	at.....in the.....direction.
Hunting	Presence of a hunting ground	at.....in the..... direction.
Tourism	Presence of National park/Game reservoirs.	at..... in the..... direction.
Settlement	Presence of settlements.	in the west of.....

6. DRAWING A SKETCH MAP OF THE AREA ON THE MAP SHOWING PHYSICAL AND MAN- MADE/HUMAN FEATURES.

Procedure:

- Identify the area on the map extract to be drawn (area in question).
- On a fresh sheet of paper, write the title in full with the place names and features asked.
- Draw a frame covering atleast three quarter $^{3}/_{4}$ of the (**Draw the same shape as the original shape of the map extract**)
- Enclose the sketch outline with a frame/boundary; include the compass on the left top side and the key below the frame to explain the features.
- With the help of main (thick) grid lines, mark and name the features in question.

7. INDENTIFYING AND DESCRIBING DRAINAGE FEATURES

Drainage is the water surface coverage of a given area.

Drainage features on a map may include; rivers,swamps, lakes,e.t.c.

Show **WHAT** (drainage feature) + **LOCAL NAME** + **WHERE**

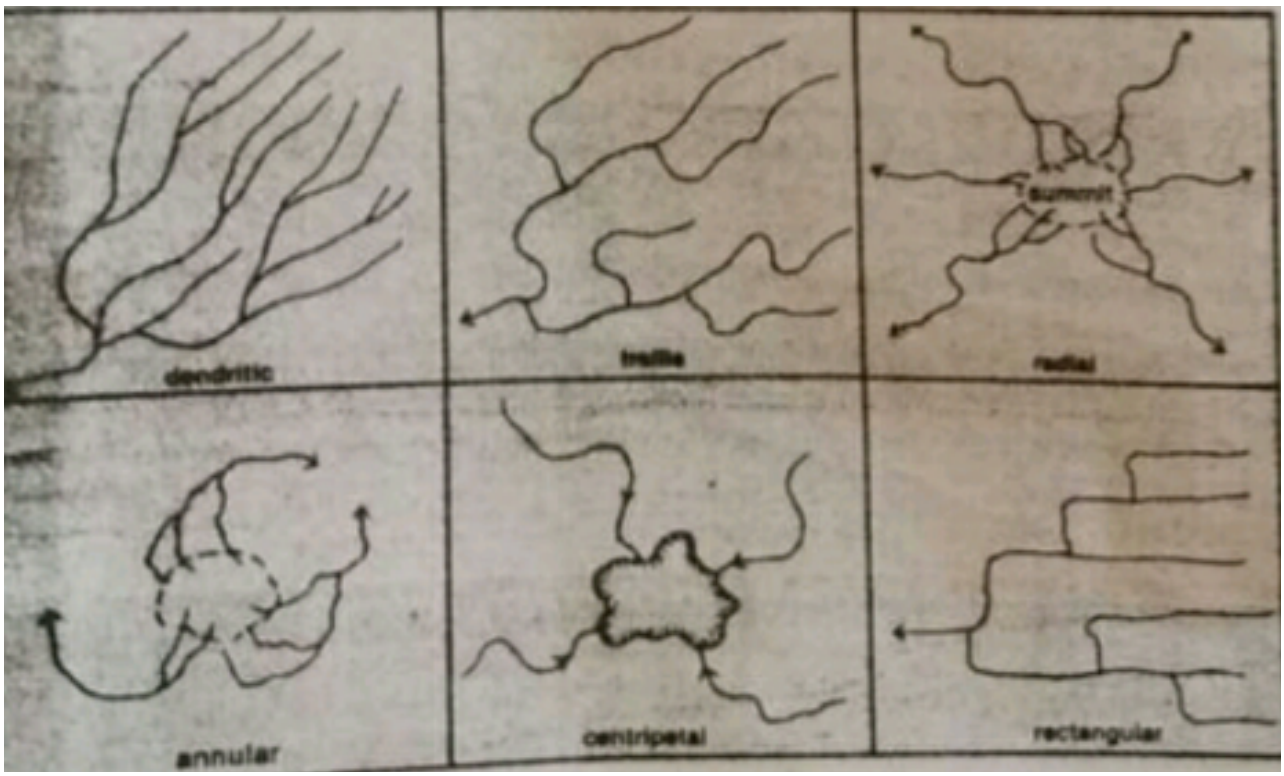
There are different drainage patterns e.g

- **Dendritic pattern** (tree like river with its branches)
- **Trellis/rectangular pattern** (tributaries meeting the main river at almost right angle-90^{0})
- **Parallel pattern** (rivers flow opposite from each other for a long distance).
- **Radial pattern** (cycle wheel like rivers from a dome to different directions).

- **Centripetal pattern** (rivers pouring into one basin).
- **Pinnate pattern** (feather like river as tributaries flow from one direction to the main river).

NB: Show **WHAT** (drainage pattern) + **LOCAL RIVER NAME** + **WHERE.**

As illustrated below:



8. DRAWING A CROSS-SECTION/LINE TRANSECT/ RELIEF SECTION.

A cross-section is drawn between two points to show the physical and human features along that line.

Procedure:

- Mark the two points (A and B)
- Use a straight edged paper to mark both the physical and man-made features and the contour and contour heights along the lines between points A and B.

- Use a graph paper to determine the vertical scale in either feet or metres but should not exceed 5cm or 6cm depending on the information collected on the straight edged paper from the map.
- Use the horizontal distance from A to B to determine the base line of the cross-section.
- Plot the contour heights on the straight edged paper considering the vertical scale.
- Join the points using a pencil with consideration of features shown on the straight edged paper i.e. valleys, hilltops, flat areas, roads, rivers, etc.
- After joining the points on the line, shade the bottom area to show the earth crust.

9. ENLARGING A SECTION OF A MAP BASING ON A SCALE FACTOR

Procedure:

- Measure the original width and length of the area to be enlarged and multiply by the scale factor in the question.
- Draw a frame of the enlarged map based on the new dimensions.
- Label and mark the features on the enlarged map basing on the relative positions of the features.
- Put a title, key and compass direction on the enlarged map.
- Put the new scale of the map at the bottom of the enlarged map i.e on enlargement of a map one should divide the original scale of the map by the scale factor e.g. ____1____divide by 2 (scale factor)

$$= \frac{1}{50{,}000} = \frac{1}{25{,}000} = 1 : 25{,}000.$$

10. REDUCTION OF A MAP OR A SECTION OF THE MAP

Procedure:

- In this case,the area covered by both the physical and human features reduce.
- Put the physical and human features in a reduced form in their relative positions.
- Put the most pronounced Eastings and Northings to help you position your features.
- Put a title, key,frame and compass direction of a reduced map.
- Put a new scale of the reduced map by multiplying the original scale of the map by the scale factor.

e.g. _____1_____ = ____1_____ or 1 : 100,000

50,000 x 2 100,000

11. DETERMINING THE INTER-VISIBILITY OF TWO PLACES

This is **the ability of two features or people to see/connect with each other at distance with ease.**

- We say two points on a map extract are inter-visible when there is no physical feature in between them.
- The two features are said not to be inter-visible when there is a physical obstacle like a hill in between them.

NB. Forests, water bodies, swamps are not obstacles

12. DETERMINING THE DIRECTION OF FLOW OF A SPECIFIC RIVER

Procedure:

- Identify the height of the ground where the river flows.
- The higher ground will mark the source of the river and the lower ground will mark the direction into which the river flows i.e.from the North west to South east wards, from the West to East wards,etc

13. DESCRIBING THE RELIEF OF THE AREA ON THE MAP

Procedure:

- State whether the area is hilly,upland, gently sloping or highland in the North, NE,East,South or West.

Examples;

- The area has broad valley in the.....direction at.....(local place name)
- The area has dissected plateaus in the..... direction around..... (local place name)
- The area has ridges in the..... direction at..... (local place name)
- The area has saddles and cols in the.....direction around..... (local place name)
- The area has narrow valleys in the.....direction at.....(local place name)
- The area has escarpments in the..... direction around..... (local place name)
- The area has conical hills in the..... direction at..... (local place name)
- The highest point is 6000 feet at.....in.....direction

at.....(local place name)

- The lowest point is 2700 feet at.....in.....direction around..... (local place name)
- The amplitude is 6000ft - 2700feet. = 4300feet.

14. DESCRIBING THE SETTLEMENT PATTERN OF THE AREA SHOWN ON THE MAP.

Settlement pattern is the layout of settlements/homes in an area.

Procedure:

- The settlement is linear along the rivers and roads for example along the dry weather road from..... to.....in the North east.
- The settlement is nucleated in areas around.....and.....towns in the West.
- The settlement is planned in the central and south of.....

15. DESCRIBING RELATIONSHIPS(GEOGRAPHIC PHENOMENON)

- Relief refers to lowland or flatland, gently sloping land, steep sloping and hilly/upland/mountainous based on the arrangement of contours on a given topographic map.e.g
- The **very closed contours** suggest **a steep area.**
- **Very closely and circular contours** suggest **hilly**/upland/mountainous area.
- **The fairly spaced contours** suggest **gentle sloping land.**
- The **widely spaced contours** suggest **a lowland or flatland.**

(i) Relief and Settlement:

The relationships between relief and settlement can be given out as follows i.e always give the direction and local place name on the map.

- Lowlands in the.....and..... direction have attracted dense/moderate/sparse settlement.
- The gently sloping areas in the.....and.....direction have attracted dense/moderate settlements.
- The steep areas in the..... and..... direction have scared away settlement.
- The lowlands in the.....have swamps which have scared away settlements.

(ii) Relief and Drainage

Drainage refers to water features such as swamps, rivers, lakes,etc.

The relationships can be brought out as follows;

- The lowland areas of the.....,.....and..... direction are occupied by seasonal/permanent swamps.
- The broad valley in the.....direction is occupied by lake.....
- The rivers in the..... direction flow from highlands/hills to lowlands in the..... direction.
- The narrow valleys in the.....direction are drained by rivers.....and.....

(iii) Relief and Communication

Communication lines include loose surface roads, all weather roads, dry weather roads, motorable trucks and footpaths.

The relationships between relief and communication lines can be brought out as follows;

- Steep areas in.....and.....direction are crossed by footpaths.
- The escarpments, saddles and cols in the.....direction are crossed by footpaths.
- The steep areas of..... direction are crossed by motorable trucks.
- Roads avoid steep areas of the.....and.....direction.
- Loose surface roads occupy the gentle slopes in.....direction.
- Dry weather roads occupy the lowlands in the.....direction for example the road from.....to.....

(iv) Drainage and settlement

- Settlements avoid seasonal swamps in the.....direction for fear of vectors such as mosquitoes and tsetse flies.
- Settlements avoid permanent swamps for example.....in..... direction for fear of floods and vectors like mosquitoes.
- Settlements occupy the shores of the lake.....in the.....direction.
- Settlements occupy areas along river.....because of the fertile soils and regular supply of water.

(v) Drainage and communication

- The swampy areas in the.....direction are crossed by footpaths.
- The permanent swamps in the..... and..... direction are crossed by motorable trucks using culverts and bridges.
- Rivers such as..... and..... are crossed by dry weather roads using bridges and culverts.
- Roads avoid seasonal and permanent swamps in the..... direction.
- Rivers or lakes are crossed using a ferry for example between..... and.....in the.....direction.

(vi) Settlement and communication

- Dry weather roads attract linear settlement in the..... direction on the road from..... to.....
- Settlements occupy areas along loose surface and dry weather roads in the..... direction along roads from.....to.....
- Settlements avoid the railway line for example in.....direction on the railway line from..... to.....
- Settlements occupy areas around landing sites for example at.....in the.....direction.

16. VERTICAL INTERVAL

- This is the gap or range between two successive contours on the map extract.
- It is also indicated at the extreme bottom left corner of the map extract.
- It is calculated by getting the difference between two contours following each other e.g.**3500ft - 3450ft = 50ft.**

17. AMPLITUDE

- This is literally known as "contour range ".
- It is calculated by subtracting the lowest contour from the highest contour on the map extract.

e.g. 4550ft - 3450ft = 1100ft

18. LOCATION AND HEMISPHERE

Location is the global position of a place in terms of latitudes and longitudes while hemisphere of an area is the position of the place in relation to the equator.

- On the extreme east and west of the map extract are degrees that may be increasing northwards or south wards.
- When degrees increase northwards ,it is an indication that the area is in the northern hemisphere and vice versa.
- You may also consider the abbreviations like 1^0 5'N; which means northern hemisphere.

19. DETOUR INDEX

$$\text{Formula ; } \frac{\text{Actual distance - straight distance}}{\text{Actual distance}} \times 100$$

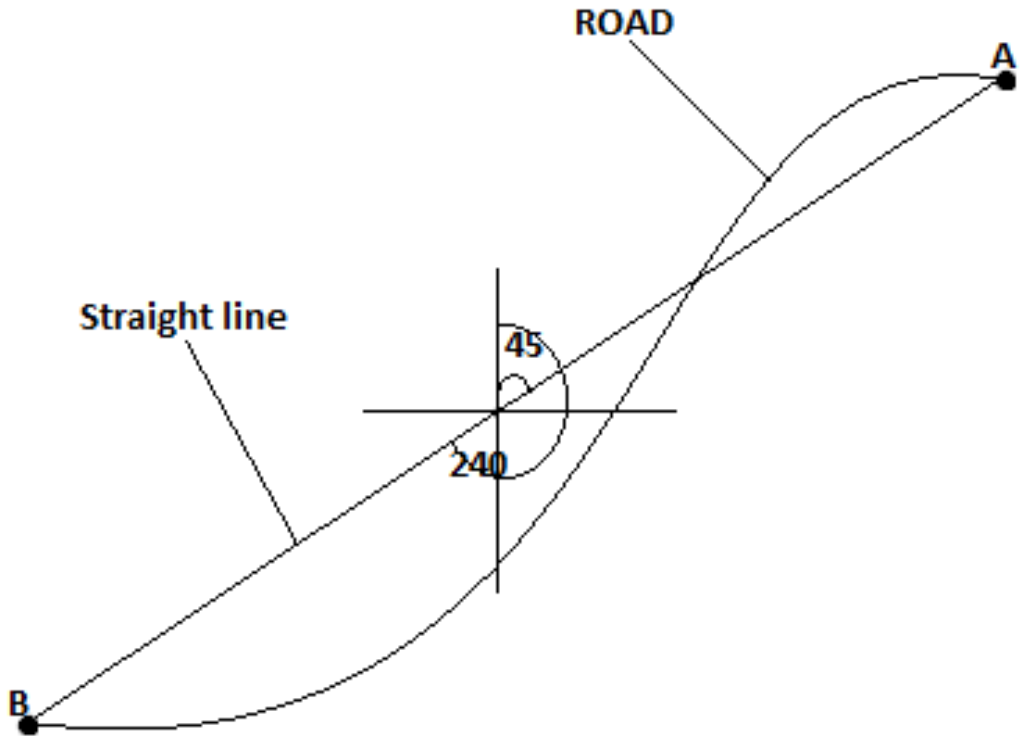
- The Actual distance can be obtained using a thread along the feature e.g road between the two points.
- The straight line distance is obtained by joining the two points in question along the feature with a straight line.
- Then using a straight edge of a paper, get the distance of the straight line.

20. TREND

This is the degree segments from the point of start to the point of end along the transport route.

- ❖ Identify the transport route in question and the two points asked.
- ❖ Draw a line to join the two points along the transport route.
- ❖ Draw a compass direction in the middle of the line.
- ❖ Using a protractor, measure from north clockwise up to when the line is met e.g **045^0.**
- ❖ Measure again from north clockwise up to when the line is met the second time e.g **240^0.**

<u>illustration :</u>



Trend is given as 045^0 _ 240^0.

21.DESCRIBING THE CLIMATE OF THE AREA SHOWN ON THE MAP

Procedure; The following parameters can be used.

- The thick forests in the South West show that the area receives heavy and reliable rainfall through out the year.
- The permanent swamps in the.....direction suggests that the area receives rainfall through out the year typical of equatorial climate.
- The thick forest vegetation in the..... direction suggests that the temperatures are hot of over 24^0C and it is also wet.
- The existence of permanent rivers in the..... direction suggest that the area has high humidity typical of equatorial or savanna climate.
- The evenly distributed settlements in the..... direction suggest that the rainfall is reliable and suits crops growing.
- The presence of hard and tough grass such as thickets and shrubs in the..... direction suggest that the area receives unreliable rainfall, low rainfall amounts of less than 750mm and has a marked dry season.
- The presence of seasonal swamps in the.....direction suggests that the area experiences a long dry season typical of savanna climate or semi-desert climate.
- The presence of waterholes and valley dams at .....and..... in the..... direction suggest that there is a shortage of surface water for the animals and home use typical of semi-deserts or rangelands of East Africa.

22.IDENTIFICATION AND DESCRIBING PROBLEMS IN THE AREA ON A MAP EXTRACT

The problems faced by areas in the area shown on the map extract can be physical or human as seen in the table below.

Must show WHAT (**problem**) INDICATOR **(feature)** + WHERE **(location)**

E.g using a map extract of Nabyeso.There is **flooding**(problem) due to the presence of a **seasonal swamp**(feature) at **Kadomato** i**n the south**(location).

Indicator/feature	Problem/challenge
Steep slopes/hilly areas/mountainous areas.	Severe soil erosion/limited mechanized agriculture/limited settlement/remoteness.
Broad and narrow valleys	Poor transport facilities/frequent flooding/remoteness
Seasonal and permanent swamps	Seasonal flooding/dangerous wild animals/harmful pests and diseases
Forests/permanent swamps	dangerous wild animals/harmful pests and diseases/remoteness/insecurity/limited transport facilities.
Transport routes/industries/towns/ trading centres.	Air,noise, water or dust pollution, accidents
Sparse settlement	Limited social services/remoteness.
Dense population	Easy spread of diseases/congestion/environmental pollution/shortage of land/land fragmentation/high crime rate e.t.c.

Boreholes/valley dams/water tanks/seasonal swamps/wells.	Drought/shortage of water/famine

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