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## Geography (UACE) paper 2 section A revision questions

1. Study the table below showing the area under forest in selected countries in Africa (2010) and answer the questions that follow

Country	Total forested area (km <sup>2</sup> )	Total land area (km <sup>2</sup> )
Algeria	14,920	2,381,41
Nigeria	90,410	923,768
Morocco	51,319	446,550
Mali	124,900	1,240,000
Cote d'Ivoire	104,030	322,463
Niger	12,040	1,267,000

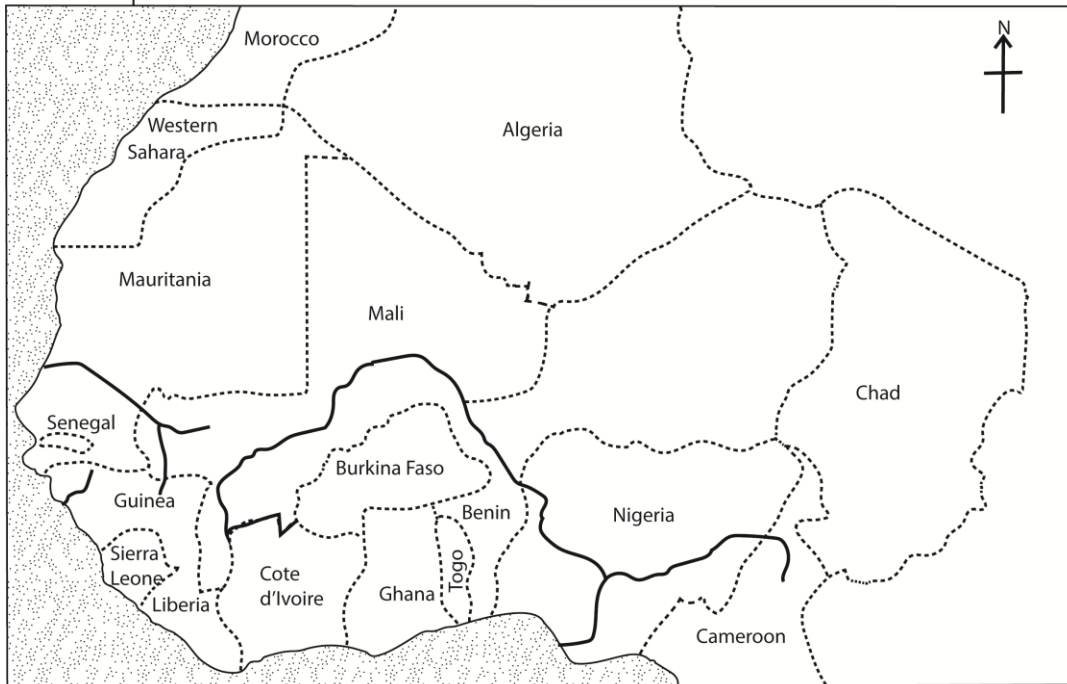
Adapted: 2010 World Development Indicators, World Bank, Washington D.C. pp1-9

Viacmillan Uganda Secondary School Atlas Pp 114

Using the baseline map provided

- Draw super-imposed proportional squares to represent the information in the table above (12marks)
- Outline the advantages and disadvantages of using the statistical method in (a) above (05marks)
- Describe the conditions which have favored the development of the forestry industry in either Algeria or Cote d'Ivoire.

Baseline map of selected countries of Africa



Proposed guide

- (a) Draw super-imposed proportional squares to represent the information in the table above (12marks)

The candidates are expected to draw super imposed proportional squares on the basemap provided to show total forested area (km<sup>2</sup>) vis-à-vis total land area(km<sup>2</sup>) for each of theselected country in Africa.

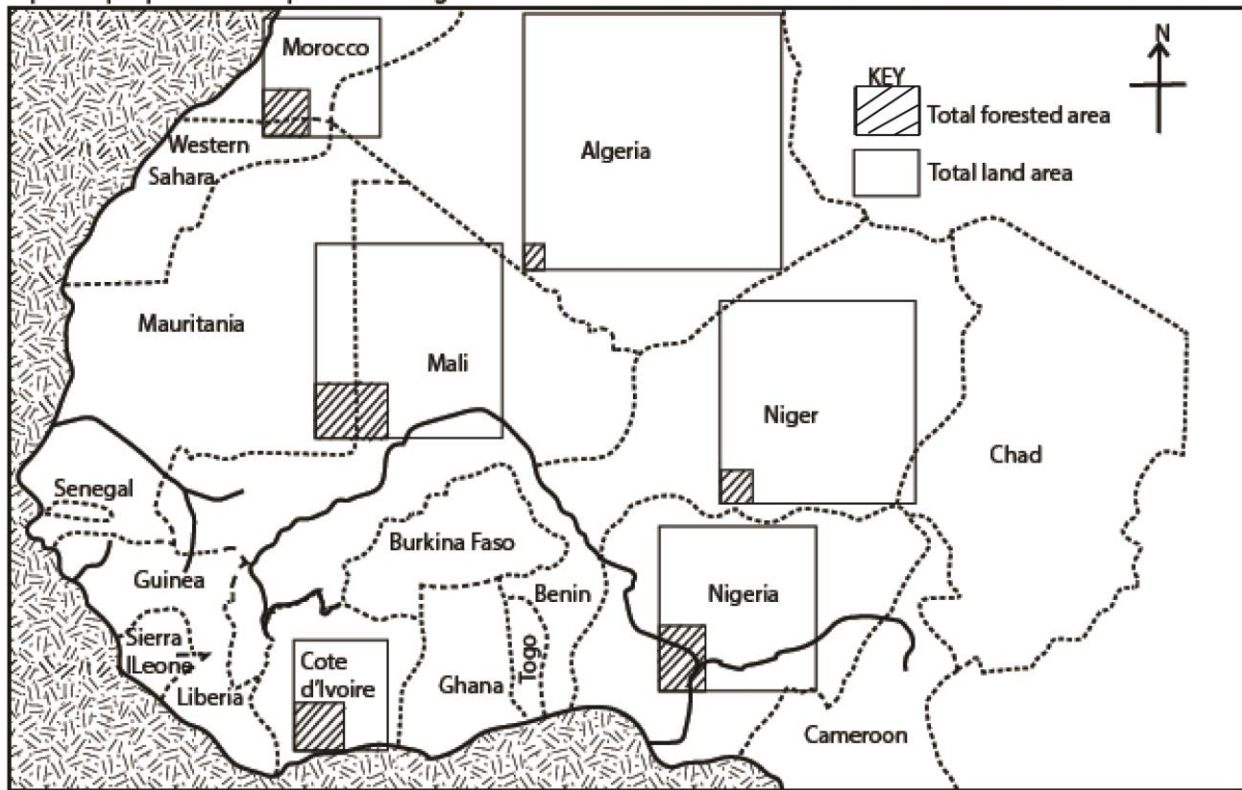
Procedure

Find the length of representation squares of total land and total forested area of each country by finding the squared root of the respective area divided by the scale

Assuming the scale 1cm:300 units

Country	Forested area	Total land area
Algeria	$\frac{\sqrt{14,920}}{300} = \frac{122.1}{300} = 0.4cm$	$\frac{\sqrt{2,381,741}}{300} = \frac{1543.3}{300} = 5.1cm$
Nigeria	$\frac{\sqrt{90,410}}{300} = \frac{300.6}{300} = 1.0cm$	$\frac{\sqrt{923,768}}{300} = \frac{961}{300} = 3.2cm$
Morocco	$\frac{\sqrt{51,310}}{300} = \frac{226.5}{300} = 0.8cm$	$\frac{\sqrt{446,550}}{300} = \frac{668.2}{300} = 2.2cm$
Mali	$\frac{\sqrt{124,900}}{300} = \frac{353.4}{300} = 1.2cm$	$\frac{\sqrt{1,240,000}}{300} = \frac{1113.5}{300} = 3.7cm$
Cote d'Ivoire	$\frac{\sqrt{104,030}}{300} = \frac{322.5}{300} = 1.1cm$	$\frac{\sqrt{322,463}}{300} = \frac{567.8}{300} = 1.9cm$
Niger	$\frac{\sqrt{12,040}}{300} = \frac{109.}{300} = 0.4cm$	$\frac{\sqrt{1,267,000}}{300} = \frac{1,125.6}{300} = 3.8cm$

Imposed proportional square showing total forested area and total land area of selected countries in Africa



(b) Advantages of the method

- Is easy to interpret
- It is used for comparison
- It has good visual impression
- It can be imposed on maps
- It shows variety of information
- It is easy to draw.

Disadvantages include

- It involves tedious calculations
- It does not show absolute values
- Appears congested
- Time consuming

(c) The conditions for growth of forestry industry are more or less similar in both countries

Cote d'Ivoire

- Equatorial climate characterized by hot temperature of about  $24^{\circ}\text{C}$  and wet conditions i.e. heavy and well distributed rainfall of over 1500mm favor growth of forests
- Fairly fertile soils that favor the quick growth of forests especially in the southern region and around Gagnoa and Divo.

- Fairly low altitude in much of the country that rarely exceeds 200m above sea level favors growth of big trees such as Ebony, mahogany etc.
- The mountainous nature in some areas limits settlement so favors the growth of forests. For example the Toura mountains in the west of Ivory coast.
- Existence of numerous rivers for floating and transporting logs. E.g. R. Sassandra, R. Cavafia, R. Komoe and R. Bandama.
- Developed coastal ports such as Sassandra, San Pedro and Abidjan handle forestry exports such as timber.
- Existence of a variety of commercial tree species such as Mahogany, Ebony, Iroko, Idigbo that command high prices on the world market.
- Existence of capital to inject in the forestry industry. Such capital come from the state and foreign French companies.
- There is relatively a big local market for forestry products and ready market form France, Malaysia, India and Japan.
- Modern technology in form of tractors, diesel saws and chainsawa are used to exploit the forest cheaply and efficiently.
- Presence of both skilled and semi-skilled labour. Skilled labour is provided by the French, malaysian and Chinese workers while the semi-skilled labour is provided by the locals that do manual work like chopping of leaves and transportation of logs.
- Relative political stability favoring foreign investment in forest industries
- Supportive government policy e.g. afforestation and re-afforestation in south-west.
- Presence of developed roads and railways for cheap transport of forest products
- Presence of vast land where forests grow
- Intensive research to develop industry by the cote d'Ivoire forestry Authority
- Presence of cheap energy generated by R. Bandama and Sassandra for processing of products from trees.

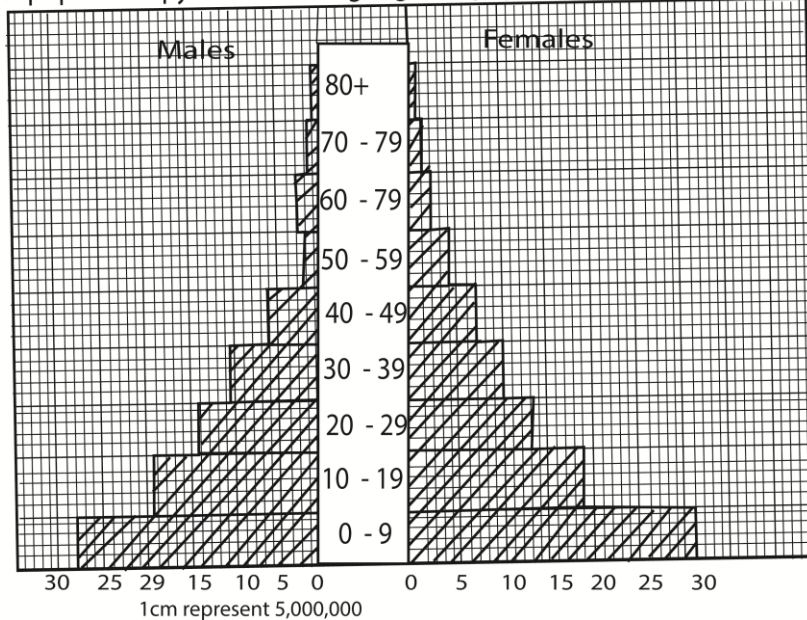
2. Study the table below showing Nigeria's population structure and answer the questions that follow;  
Table showing Nigeria's population in millions (2012)

Age group	Males	Females
80+	0.5	0.5
70 – 79	1.2	1.3
60 – 69	2.6	2.6
50 – 59	2.3	4.0
40 – 49	6.6	6.8
30 – 39	10.3	10.1
20 – 29	14.6	13.9
10 – 19	19.5	18.6
0 – 9	27.6	26.1

Adapted: Index Mundi, com/nigeria. age-structure.htm CIA World Bank Factbook, as of February 21, 2013

- (a) Draw a population pyramid to represent the information given in the table (10 marks)  
(The candidates are expected to draw population pyramid to represent population (2012) in millions)

A population pyramid showing Nigeria's population in 2012 in millions



(b) Outline the merits of using the statistical method in (a) above (03marks)

- It has good visual impression
- It is easy to interpret
- It used for comparison purpose
- It is easy to draw
- It doesn't involve calculation
- It can be superimposed
- It shows varying information (versatile)

(c) Describe the structure of Nigeria's population in 2012 (04marks)

- It has a wider base/it has a large population of young people
- It has a narrow top/it has a small aged population
- Age groups 0 – 39 years has more males than females in Nigeria's population
- Age groups (50- 59) and (0 – 79) has more females than males
- Age groups (50 – 69) and 80+ have the same number of males and females
- It has few old dependents
- It exhibits low life expectancy

(d) Explain the implication of such a population structure on the development of Nigeria. (08marks)

Positive implication

- Provision of labour
- Provision of market
- Provision of security
- Provision of revenue
- The young population encourages creativity and innovation
- Enhance provision of social services

- Encourages utilization of resources
- Leads to development of urban centres.

Negative implication

- High dependence ratio
- Strain social services
- Food shortage/hunger
- Inadequate accommodation
- Unemployment
- Increased crime rate
- Shortage of land/land fragmentation
- Over utilization of resources/encroachment on environment
- Pollution
- Increased rural urban migration
- Brain drainage
- Over crowding
- Easy spread of diseases
- Insecurity/unrest
- Immorality/juvenile delinquency
- Cultural erosion
- High expenditure on social services.

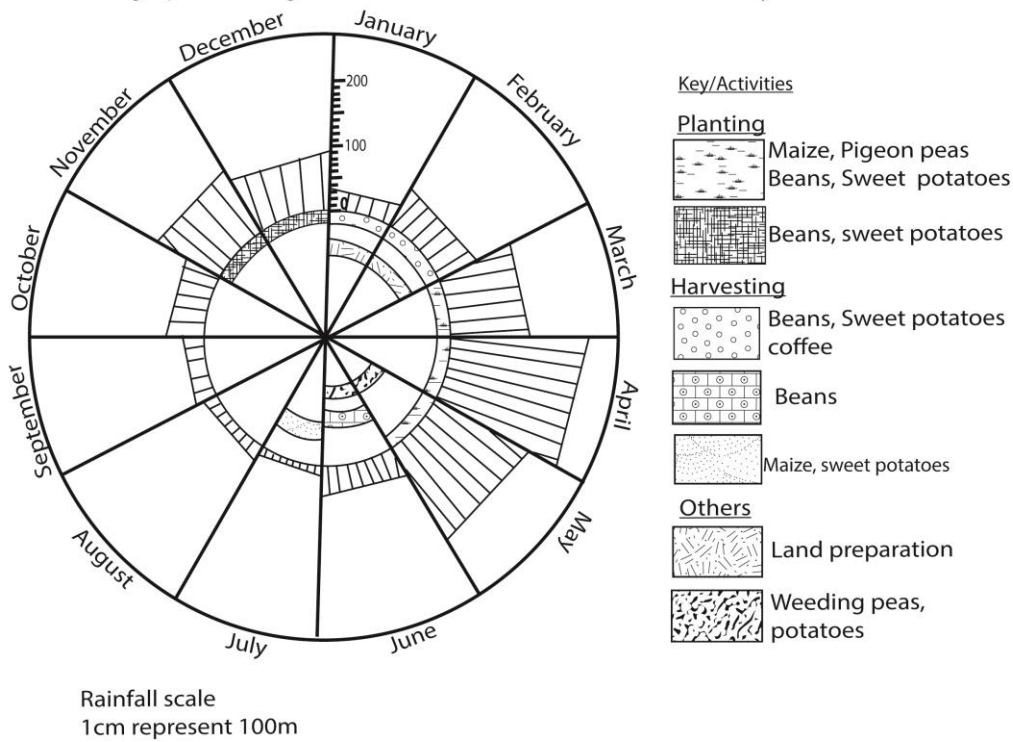
3. Study the table below showing the farmers' calendar in Kikuyu-land, east Africa and answer the questions that follow:

Months	Rainfall (mm)	Planting	Harvesting	othera
J	38		Bean	Land preparation
F	64		Sweet potatoes coffee	
M	125	Maize		
A	211	Pigeon peas		
M	158	Beans Sweet potatoes		Weeding Peas potatoes
J	46		Beans	
J	15		Maize Sweet potatoes	
A	25			
S	31			
O	53			
N	109	Beans		
D	86	Sweet potatoes		

Adapted. Hickman G. at al (1995) Lands and peoples of East Africa: Longman P 72

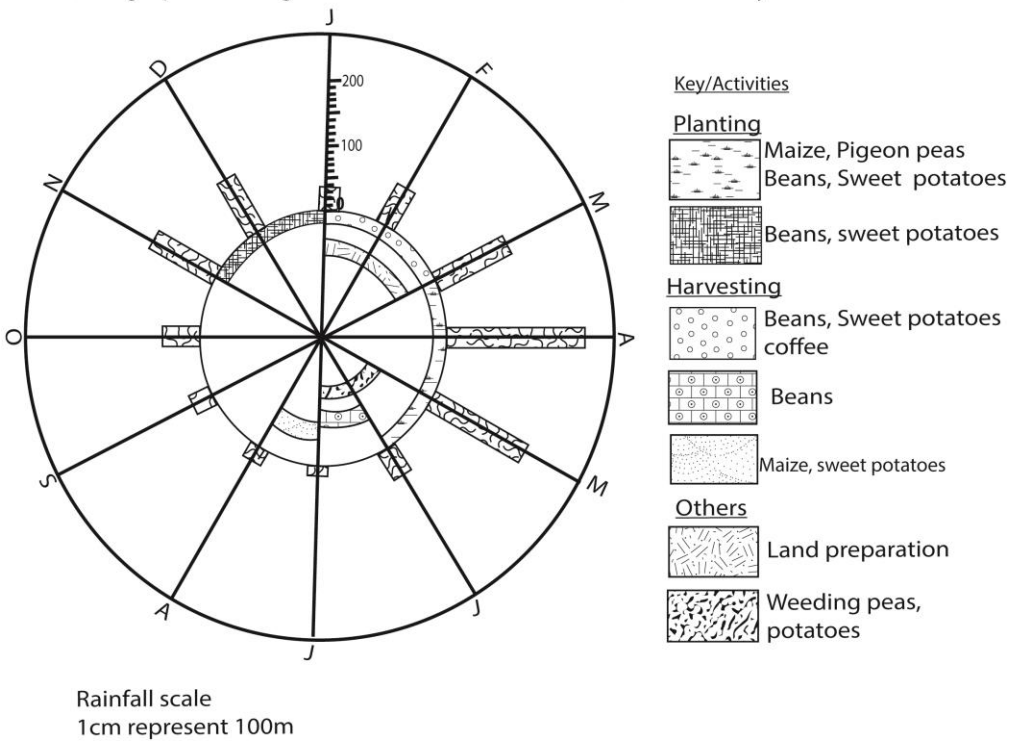
(a) Draw a circular graph to represent the information in the table above (10marks)

A circular graph showing Rainfall and the farmer's calendar in Kikuyu-land



Or

A circular graph showing Rainfall and the farmer's calendar in Kikuyu-land



(b) Outline

- (i) Merits (02marks)
- It is easy to draw



- It is easy to interpret
  - It has good impression
  - It shows a variety of information
  - It is used for comparison purpose
  - It can be superimposed
  - Cyclic nature portray continuity
  - It requires no calculations
- (ii) Demerits of using the statistical method in (a) above(02marks)
- It tedious
  - It appears congested
  - Occupies a big space
  - Cyclic bars are not easy to draw
  - Wide amplitude makes it difficult to derive the scale

(c) Explain the relationship between rainfall and farming activities in Kikuyu-land (08marks)

- During the dry season/low rainfall period, harvesting of beans, sweet potatoes and coffee take place.
- The dry season/low rainfall period is used for planting of maize, pigeon peas, beans and sweet potatoes
- The wet season/rainy season influence the weeding activity
- The wet/rainy season is for planting of Beans and sweet potatoes

(d) Suggest measure that should be taken to improve farming activities in Kikuyu land (03marks)

Measures suggested as to improve farming activities in Kikuyu-land are

- To use spraying methods
- Use irrigation methods to boost farming
- To research and get resistant and high yield crops
- Obtaining agricultural loans to expand their farms
- Imparting new agricultural skills to their labourers
- Crop rotation to conserve their soils
- Improve transport and communication in order to reach their market easily and cheaply
- To carry out market research for their produce.
- Use improved technology
- Setting up co-operatives to buy and market produce
- Carry out land reforms.

4. Study the table below showing area under forest cover for selected countries in south Africa (2010) and answer the questions that folow

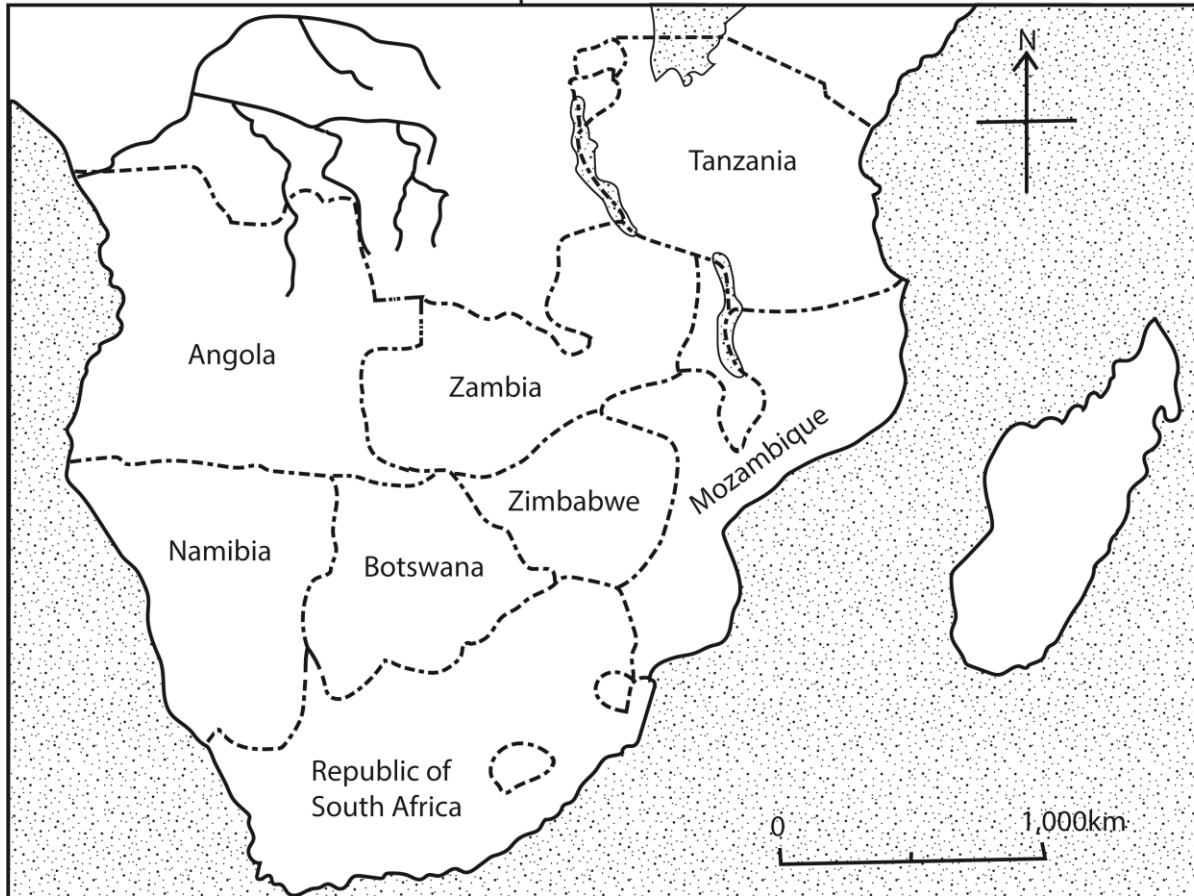
Country	Forested area (km <sup>2</sup> )
Botswana	113,510
Malawi	32,370
Mozambique	390,220
Namibia	72,900
South Africa	56,660
Zambia	494,680



**Adapted:**2010 World Development Indicators, world Bank, Washington D.C Pp1-9; Macmillan Uganda Secondary school Atlas Pp 114

- (a) Using the baseine map of south Africa provided, draw proportional circles to represent the information in the table above (10 marks)
- (b) Outline the merits and demerits of using the above method (07marks)
- (c) Account for the development of the forestry industry in any one country given in the tabe . (08marks)

A Baseline Map of south Africa



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**Solution**

(a) Candidates are expected to calculate the radius using a common scale so as to draw proportional circles on the baseline map of south africa.

Note we consider two approaches for finding the radius

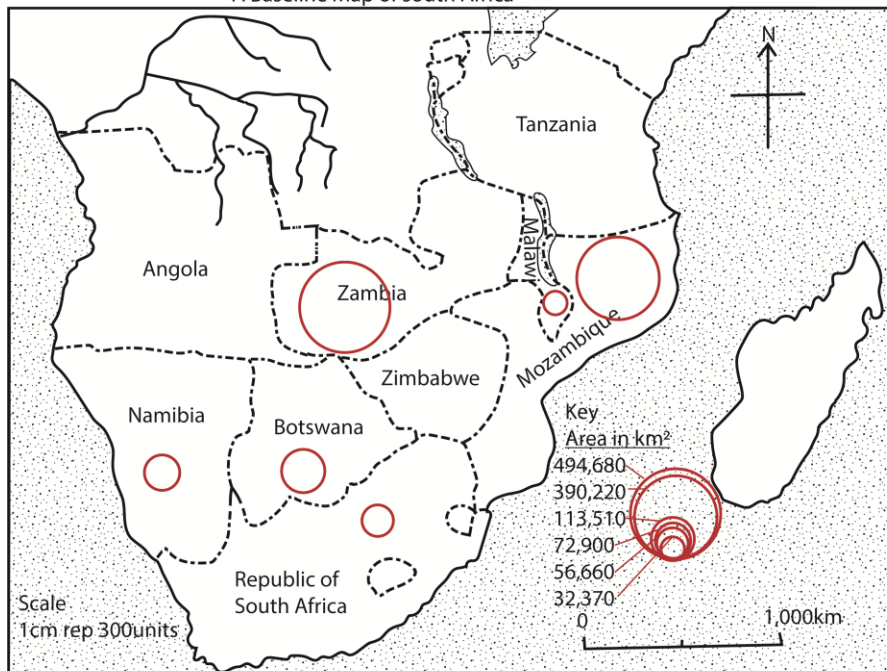
Approach 1: Using the square root approach, i.e. radius = linear scale factor =  $\sqrt{\text{area scale factor}}$ .  
When the values of the radius obtained are too big to fit on the paper, appropriate scale is used.

Country	Calculated radius	Scaled down radius
Botswana	$\sqrt{113,510} = 336.9$	$\frac{336.9}{300} = 1.1cm$
Malawi	$\sqrt{32,370} = 179.9$	$\frac{179.9}{300} = 0.6cm$
Mozambique	$\sqrt{390,220} = 624.7$	$\frac{624.7}{300} = 2.1cm$
Namibia	$\sqrt{72,900} = 270$	$\frac{270}{300} = 0.9cm$
South africa	$\sqrt{56,660} = 238$	$\frac{238}{300} = 0.8cm$
Zambia	$\sqrt{494,680} = 703.3$	$\frac{703.3}{300} = 2.3cm$

Note: Assumed scale- 1cm represent 300units

Proportional circles showing area under forest cover for the selected countries of southern Africa

A Baseline Map of south Africa

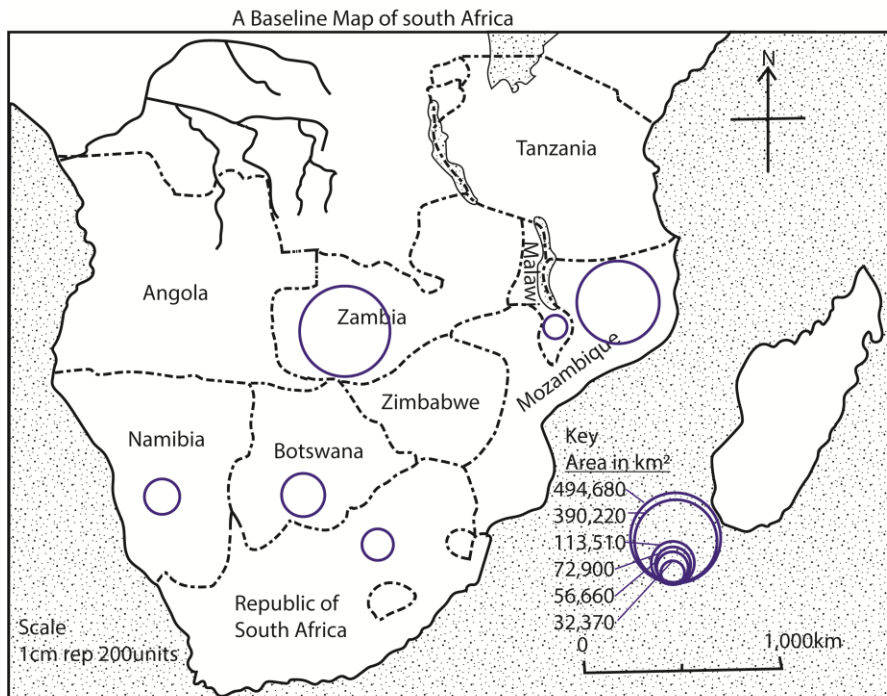


Approach 2: Using the general formula for the area of circle i.e  $Area = \pi r^2$  and  $r = \sqrt{\frac{Area}{\pi}}$

Country	Calculated radius	Scaled down radius
Botswana	$\sqrt{\frac{113,510}{3.14}} = 190.1$	$\frac{190.1}{200} = 1.0cm$
Malawi	$\sqrt{\frac{32,370}{3.14}} = 101.5$	$\frac{101.5}{200} = 0.5cm$
Mozambique	$\sqrt{\frac{390,220}{3.14}} = 352.5$	$\frac{352.5}{200} = 1.8cm$
Namibia	$\sqrt{\frac{72,900}{3.14}} = 152.3$	$\frac{152.3}{200} = 0.8cm$
South africa	$\sqrt{\frac{56,660}{3.14}} = 134.3$	$\frac{134.3}{200} = 0.7cm$
Zambia	$\sqrt{\frac{494,680}{3.14}} = 397$	$\frac{397}{200} = 2.0cm$

Note: Assumed scale- 1cm represent 200units

Proportional circles showing area under forest cover for the selected countries of southern Africa



(b) Merits of the method

- It is easy to draw
- It is for comparison purpose
- It is easy to interpret
- Used to show variety of information
- It has good visual impression
- Superimposing is possible

Demerits of the method

- It involves lengthy calculation
- It appears congested
- It is tedious
- May not show absolute figures
- It consume space
- Difficult to find suitable scale

(c) The candidate must state one country from the table and account for the development of the forestry industry. NB. The factors are more or less similar. These include among others:

- Favorable climate conditions
- Altitude
- Drainage/water supply
- Fertile soils
- Presence of vast land for growth of forests
- Presence of commercial tree species
- Presence of labour
- High level of technology
- Research
- Availability of adequate capital
- Presence of transport means
- Availability of market
- Presence of power
- Political stability
- Favorable government policy.

These outlined points need explanation in order to earn marks.

5. Study the table showing road and railway transport in selected African countries (2000-2005) and answer the questions that follow

Country	Road network (km)	Railway network
Nigeria	193,200	3,528
Botswana	24,455	888
Cote d'Ivoire	80,000	639
Dr Congo	153,497	3,641
Ghana	47,787	977
Zambia	91,440	1,273
Total	590,379	10,946

Adapted: 200 World Development Indicators: World Bank, African Database p 72

- (a) Draw combined proportional divided semi-circle to represent the information given in the table (12marks)
- (b) Outline the demerits of using the statistical method in (a) above (05marks)
- (c) Identify the country with the longest:
- (i) Road network (01mark)
  - (ii) Railway network (01mark)
- (d) Account for the development of the transport sector in any one country identified in (c) above.

Solution

The radius of each of the semi-circles is obtained by calculating the square root of the total road and railway distances.

Road network

$$r = \sqrt{590,379} = 768$$

Scale let 1cm represent 100km

$$\therefore r = \frac{768}{100} = 7.7\text{cm}$$

Railway network

$$r = \sqrt{10,946} = 105$$

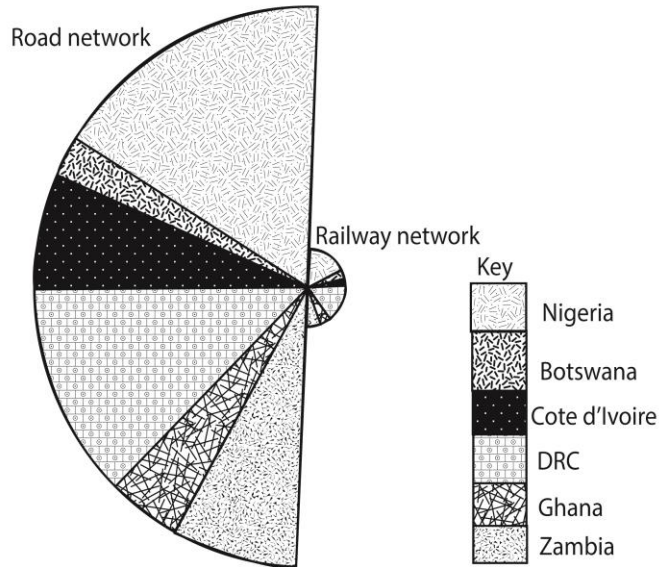
Scale let 1cm represent 100km

$$\therefore r = \frac{105}{100} = 1.1\text{cm}$$

Representative degrees for the transport network of each country

Country	Road network (degrees)	Railway network
Nigeria	$\frac{193,200}{590379} \times 180 = 58.9^{\circ}$	$\frac{3,528}{10,946} \times 180 = 58^{\circ}$
Botswana	$\frac{24,455}{590379} \times 180 = 7.5^{\circ}$	$\frac{888}{10,946} \times 180 = 14.6^{\circ}$
Cote d'Ivoire	$\frac{80,000}{590379} \times 180 = 24.4^{\circ}$	$\frac{639}{10,946} \times 180 = 10.5^{\circ}$
Dr Congo	$\frac{153,497}{590379} \times 180 = 46.8^{\circ}$	$\frac{3,641}{10,946} \times 180 = 59.9^{\circ}$
Ghana	$\frac{47,787}{590379} \times 180 = 14.6^{\circ}$	$\frac{977}{10,946} \times 180 = 16^{\circ}$
Zambia	$\frac{91,440}{590379} \times 180 = 27.9^{\circ}$	$\frac{1,273}{10,946} \times 180 = 20.9^{\circ}$
Total	590,379	10,946

A combined proportional divided semi-circles showing road and railway transport network in selected African countries (2000-2005)



Or

Road network  
Area = total distance

$$r = \sqrt{\frac{590379}{3.14}} = 433.6$$

1cm represent 100 units

$$\therefore r = \frac{433.6}{100} = 4.4cm$$

$$\pi r^2 = 590379$$

$$3.14r^2 = 590379$$

railway network  
Area = total distance

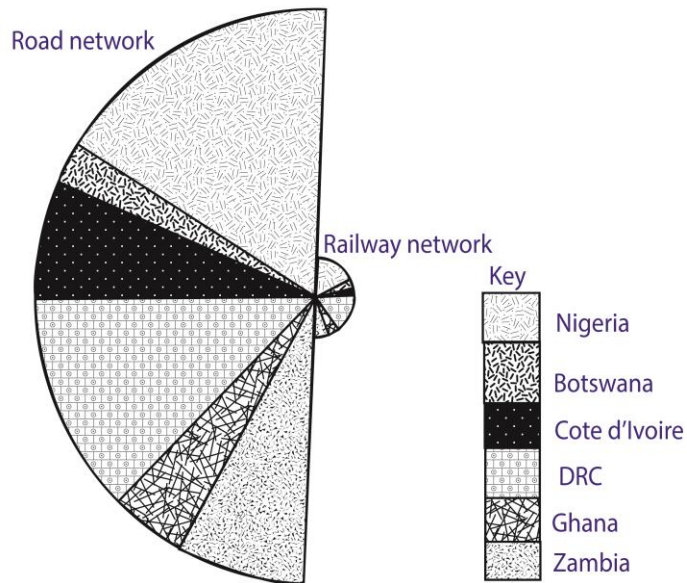
$$\pi r^2 = 10,946$$

$$3.16r^2 = 10,946$$

$$r = \sqrt{\frac{10,946}{3.14}} = 59$$

$$\therefore r = \frac{59}{100} = 0.6cm$$

A combined proportional divided semi-circles showing road and railway transport network in selected African countries (2000-2005)



(b) Demerits

- Requires tedious calculations
- Drawing consumes time
- It does not show absolute values
- It is difficult to represent small angles
- Not easy to read angles without measurement
- Many variable/items make it congested
- Occupies a large space

(c) country with the longest

(i) road network is Nigeria

(ii) railway network: DRC

(d) Factors for the development of the transport sector in either Nigeria or DRC

They are more or less similar for both countries

- Presence of abundant mineral resources for example gold, tin in Katanga and Kisangani provinces, others are copper, diamond in Kasai region and iron ore that necessitated construction of railway line in the eastern and northern part of DRC.
- Existence of extensive forest resources favored development of the railway transport in order to exploit forest products such as timber
- Presence of rich agricultural inter land with a variety of commodities to be transported along railway line. These included food stuffs like bananas, coffee, bean, livestock, maize, sugar canes etc.
- The gently sloping landscape in the north in Kisangani province and in the eastern Katanga province made it easy to lay or construct the railway line for use in transportation of people, merchandise and mineral like gold.
- Availability of capital use for railway construction.



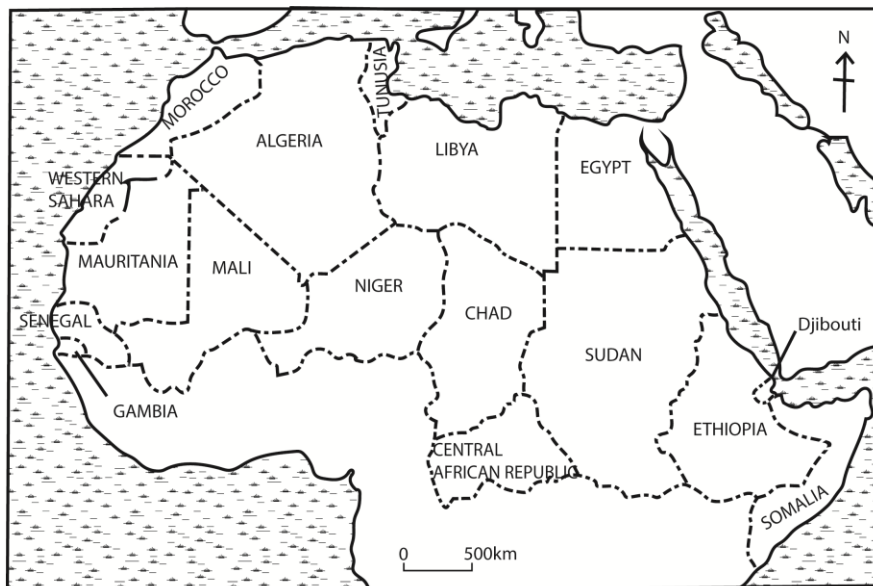
- Presence of skilled (from France, Belgium and china), semi-skilled and unskilled labour.
- Presence of improved technology such as use of tractor in clearing land where the lines would pass, use of diesel saws to cut trees, use of crane to lay the railways.
- Large population in interior to provide market for the railway service.
- Favorable government policies for the construction of transport system
- Political stability that allowed for construction of railway lines

6. Study the table provided below showing land area and population size for selected African countries and answer the questions that follow

Country	Land Area ('000s km <sup>2</sup> )	Population size ('000s)
Algeria	2,382	30,800
Central African Republic	623	3,800
Chad	1,259	7,900
Djibouti	23	600
Egypt	995	65,200
Ethiopia	1,000	65,800
Libya	1,760	5,400
Morocco	446	29,200
Niger	1,267	11,200
Somalia	627	9,100
Sudan	2,376	31,700
Tunisia	155	9,700

Adapted: 2003 African Development Indicator; World Bank, Washington D.C p5

- Calculate the population density for each of the selected countries shown in the table (06marks)
- Using the base map provided below, draw a choropleth (density) map to represent the information obtained in (a) above(10 marks)
- Outline the demerits of the statistical method used in (b) above (03marks)
- Explain the causes of the variation in the population density of the region shown on the base map (06 marks)



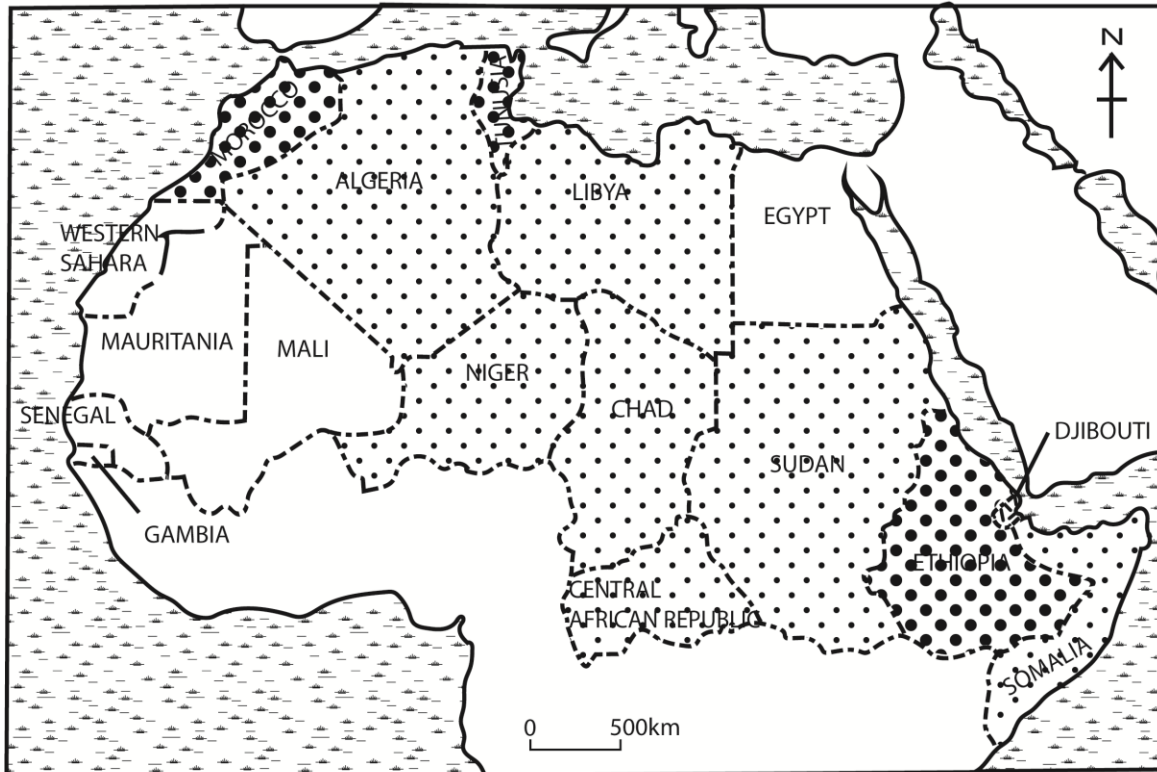
solution

$$(a) \text{ Population density} = \frac{\text{Total population}}{\text{Land area}}$$

Country	Population density (persons/sq km)
Algeria	$\frac{30,800,000}{2,382,000} = 12.9$
Central African Republic	$\frac{3,800,000}{623,000} = 6.1$
Chad	$\frac{7,900,000}{1,259,000} = 6.3$
Djibouti	$\frac{600,000}{23,000} = 26.1$
Egypt	$\frac{65,200,000}{995,000} = 65.5$
Ethiopia	$\frac{65,200,000}{1,000,000} = 65.8$
Libya	$\frac{5,400,000}{1,760,000} = 3.1$
Morocco	$\frac{29,200,000}{446,000} = 65.5$
Niger	$\frac{11,200,000}{1,267,000} = 8.8$
Somalia	$\frac{9,100,000}{627,000} = 14.5$
Sudan	$\frac{31,700,000}{2,376,000} = 13.3$
Tunisia	$\frac{9,700,000}{155,000} = 62.6$

(b)

A CHOROPLETH/DENSITY MAP SHOWING POPULATION DENSITY FOR SELECTED AFRICAN COUNTRIES



KEY



0-20



21-40



40+

(c) The demerits/disadvantages of the method used are

- Shading consumes time
- It assumes that the population is uniformly distributed throughout in the area and throughout the year.
- The assumes that the population density changes abruptly across the boundaries
- Many grades makes it congested
- Doesn't give actual population figures
- Involves tedious calculations
- Consumes a lot of space

(d) Causes of population variations

- 
- Historical factors for instance depopulation through slavery
- Climatic factors such as heavy rainfall lead to dense population
- Fertie soils lead to heavy population
- Presence vectors/diseases such as tsetse fly lead to low population.
- Presence of minerals that attracts people
- Wild animals may scare away people
- Political atmosphere such as wars in angola lead to sparce population
- Well drained areas attract people while swampy/water ogged areas lead scarce population
- Urbanization such as towns like Pretoria have more settlement

- Relief: gentle slopes usually are densely populated compared steep slopes and deep valleys
- Transport and communication/social services attract big population
- Government policy of directing population through settlement schemes.

NB. Candidates should explain the above outlined points with reference to specific examples

7. Study the table below showing land under irrigation for selected countries and answer the questions that follow

Country	Irrigated land percentage of cropland
USA	12.5
Egypt	100
China	35.5
Sudan	10.9
India	32.7
Libya	21.9
Republic of South Africa	9.5

Adapted from 2008: World Development Indicators. The World Bank, Washington D.C Pp 134-136

- Draw a divergent bar graph to represent the information given in the table (12marks)
- State the disadvantages of using the statistical method in (a) above (03marks)
- Explain the conditions which favored irrigation in either USA or the sudan. (10marks)

Possible answers

Total sum = 12.5+ 100+ 35.5 +10.9 + 32.7+21.9 + 9.5 = 223

Average =  $\frac{223}{7} = 32$

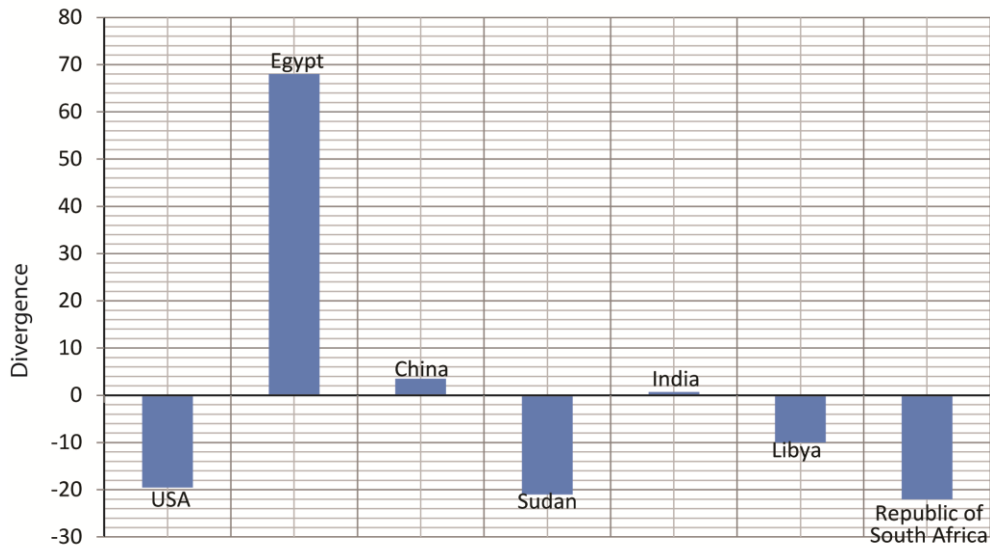
Divergence = given value – mean value

For example divergence for USA = 12.5- 32 = -19.5

Table showing divergence

Country	Irrigated land percentage of cropland	divergence
USA	12.5	-19.5
Egypt	100	68
China	35.5	3.5
Sudan	10.9	-21
India	32.7	0.7
Libya	21.9	-10
Republic of South Africa	9.5	-22

A divergence graph showing irrigated land as percentage of cropland for selected countries



Disadvantages of the statistical method above include

- Tedious
- Involve lengthy calculations
- Take a big space
- It is restricted to one purpose
- It does not portray actual values

(c) Candidates must select one country and explain the conditions that have favored irrigation farming

### Irrigation farming in USA

The irrigation projects in USA;

- the central valley of California
- Snake river project on the Snake river plains, Phoenix project in Gila river, Columbia basin along Columbia river, Tennessee river project etc.

### Factors that have favored irrigation farming in USA

#### Physical factors

- The arid/ Mediterranean and desert climate in California is characterized by low and unreliable rainfall rarely exceeding 400mm and hot temperatures above 30<sup>o</sup> during summer making agriculture difficult and necessitating irrigation.
- The gently sloping/low land of the central valley, death valley and Yucca valley in the south make irrigation cheap and easy because water freely flows under gravity.
- Availability of permanent water sources for irrigation by R. Sacramento, R. San Joaquin, and delta Mendota canal encourages use of irrigation throughout the year.
- The snowcapped Sierras Nevada Mountains provide a constant supply of melt water to rivers Sacramento, San Joaquin which is stored in Shasta dam and Friant dam and used for irrigation throughout the year.
- Availability of fertile alluvial soils deposited by R. Sacramento, san Joaquin favors growth of crops such as oranges and vegetables.
- Sparse population within California provide extensive land for carrying out irrigation farming.
- The gentle/relatively flat land scape in the ventral and Yucca valley favors mechanization and profitable output

- The Mediterranean/climate characterized by low rainfall and hot temperatures discourage the spread of pests and diseases which would destroy crops.
- The dry climate characterized by hot temperature of up to 30°C during summer encourages growth and ripening fruits such as oranges, lemon, tomatoes etc.
- Presence of improved/modern/advanced technology for construction of canals and dams that store water for irrigation throughout the year.
- Ready market from the citizens and European countries.
- Availability of capital for construction of canals and dams.
- Presence of Agro processing industries that provide market for the produce.
- Presence of skilled and unskilled labor to work on the irrigational farms
- Political stability that encourages investment in irrigation schemes.
- Supportive government policies to irrigation cooperative , fruit processing industries etc.
- Presence of well developed transport and communication facilities.
- There was a great desire for California to increase food production for ever expanding population.

### **Irrigation in sudan**

Sudan is generally a dry country and has taken advantage of r. Nile to develop irrigation farming.

The major irrigation schemes in sudan are

- Gezira Scheme on Gezira Plain along R. Nile; it produces cotton, maize, beans, etc.
- Rahad scheme located on River Rahad; produces cotton, ground nuts, vegetables and maize.
- Kanana Scheme located south of the major Gezira schem for producing sugar canes
- Danszin irrigate ranch producing vegetables, fruits, beans, groundnuts etc.
- Gash Delta Scheme on R. Gash
- Kashm el Girba Scheme along R. Atbar in North-Eastern Sudan.

### **Factors that favors irrigation farming in Sudan**

Physical factors

- The arid climate around the Gezira Scheme is characterized by high temperatures that promote the ripeningof fruits.
- The Gezira plains are generally flat fovoring mechanization as well as water flow in the irrigation canals enabling large scale farming.
- Pressence of fertile alluvial soils in the Gezira plains deposited by both White and Blue Nile promote growth of a variety of crops
- Availabiity of cheap large tracts of land along Gezira that favor large scale farming.
- Being dry; it lacks vegetation making it easy clear for irrigation farming.
- The Gezira plains have a good water table such that water logging does not occur which favors growth of cotton and sugar cane
- Presence of a small population leading availability of land for irrigation farming

### **Other factors**

- The rich history of irrigation in Sudan through use of shadoofs equipped the sudanese with adequate irrigation skills.
- Presence of abundant skilled cheap labour to clear land for farming
- Availability of capital to set up irrigation scheme with support from UK
- Relative political stability to enable continuity of irrigation and security to protect the irrigation investments.

- The need to create employment opportunities to the people in the gezira plains and Kordofan region lead to establishment and the success of the Grzira Scheme
- Appropriate research led to the success of the irrigation schemes.

8. Study the table below showing Power and energy source for the selected countries and answer the questions that follow

Country	Energy Production (Billion kWh)	Hydro-electric power (%)	Coal (%)	Oil (%)	Natural gas (%)	Nuclear Power (%)
China	1,350	16.0	78.0	4.0	1.0	1.0
Switzerland	66	56.0	0.0	1.0	2.0	41.0
Egypt	75	18.7	0.0	16.1	65.2	0.0
USA	4,000	6.0	54.0	3.0	17.0	20.0

Adapted: 2003 world Development Indicator; World Bank, Washington, DC pp 151-154.

- Draw a compound divided rectangles to represent the information given in the table (10marks)
- Outline the advantages and disadvantages of using the statistical method in (a) above. (05marks)
- Account for the high energy production in either china or the USA (06marks)
- Explain the role of power and energy in the development of any one country given in the table

Solution

- A candidate is expected to find the percentages of the total energy consumed by each of the country which are plotted on the horizontal axis,  
Total energy = 1,350 + 66 + 75 + 4000 = 5,491 Billion kWh

Percentage of energy consumed by each country

$$\text{China} = \frac{1,350}{5,491} \times 100 = 24.6\%$$

$$\text{Switzerland} = \frac{66}{5,491} \times 100 = 1.2\%$$

$$\text{Egypt} = \frac{75}{5,491} \times 100 = 1.4\%$$

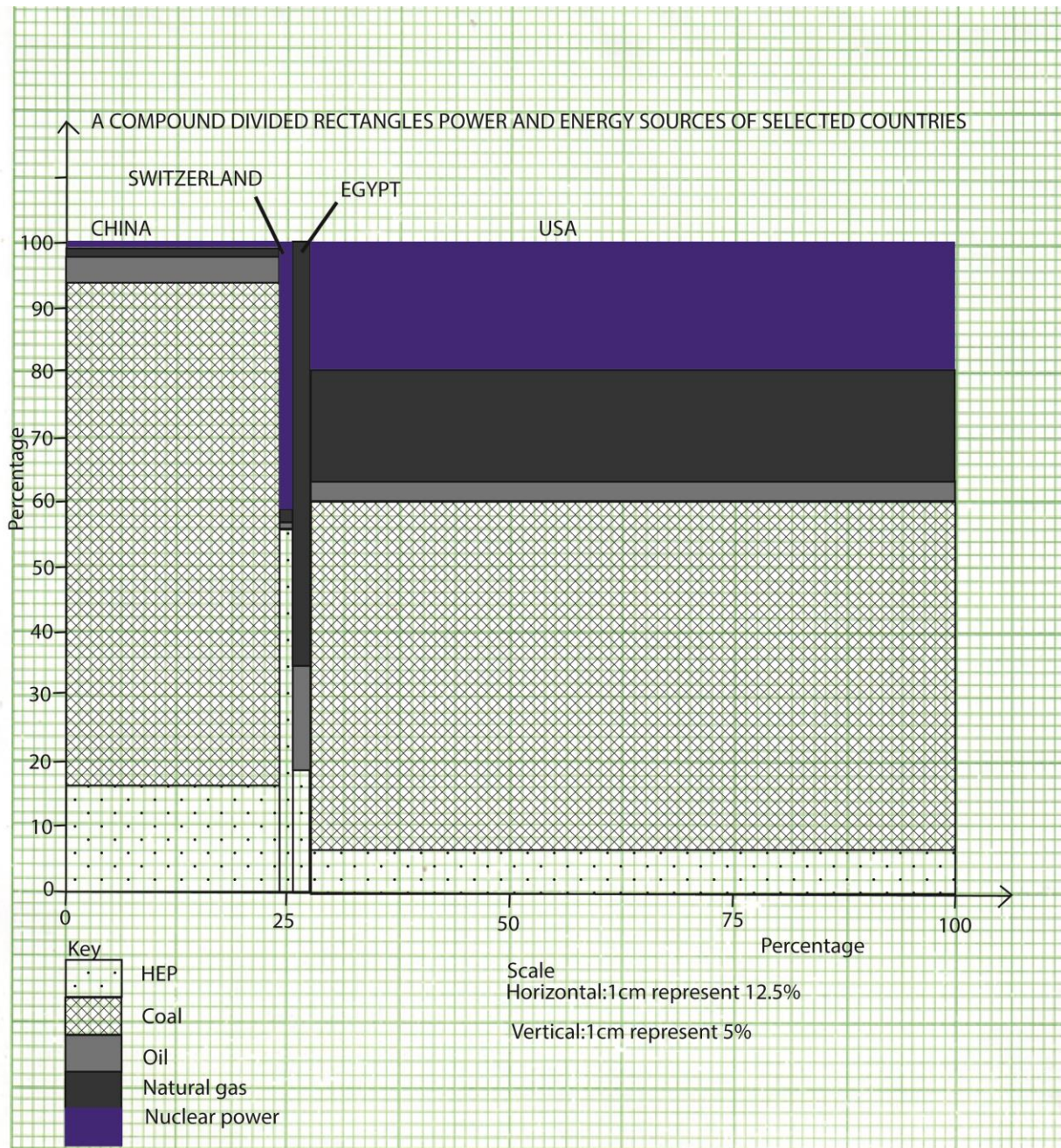
$$\text{USA} = \frac{4,000}{5,491} \times 100 = 72.8\%$$

Cumulative percentage of energy is plotted on the vertical axis

Table of cumulative percentages

Country	HEP (%)	Coal(%)	Oil(%)	Natural gas(%)	Nuclear Power (%)
China	16.0	78.0	4.0	1.0	1.0
<b>Cummulative%</b>	<b>16.0</b>	<b>94</b>	<b>98</b>	<b>99</b>	<b>100</b>
Switzerland	56.0	0.0	1.0	2.0	41.0
<b>Cummulative%</b>	<b>56</b>	<b>56</b>	<b>57</b>	<b>59</b>	<b>100</b>
Egypt	18.7	0.0	16.1	65.2	0.0
<b>Cummulative%</b>	<b>18.7</b>	<b>18.7</b>	<b>34.8</b>	<b>100</b>	<b>100</b>
USA	6.0	54.0	3.0	17.0	20.0
<b>Cummulative%</b>	<b>6.0</b>	<b>60.0</b>	<b>63.0</b>	<b>80.0</b>	<b>100</b>





(b) Advantages of a compound divided rectangle

- Gives a good visual impression
- Easy to read and understand
- Good for comparison purposes
- Can represent many variables/versatile
- Shows two dependent variable
- Does not involve complicated calculations

Disadvantages of a compound divided rectangle

- It occupies a lot of space
- Difficult to read individual component parts since they are cumulative
- Choosing a suitable scale is difficult in case of great variations in values
- Time consuming
- It becomes congested with many variable

(c) A candidate should select one country and give the reasons. These are similar

- Availability/ abundance of power and enough energy sources.
- Market for power or energy in industries
- High level of technology
- Improved research
- Skilled and unskilled labour for power plant construction
- Favorable government policy
- Favorable political climate
- Efficient transport networks
- Availability of capital to buy power generating equipment

NB. Candidates should explain the outlined points giving specific examples

(d) A candidate must name one country and explain the role of power and energy in the development. The reasons are more or less similar. They include

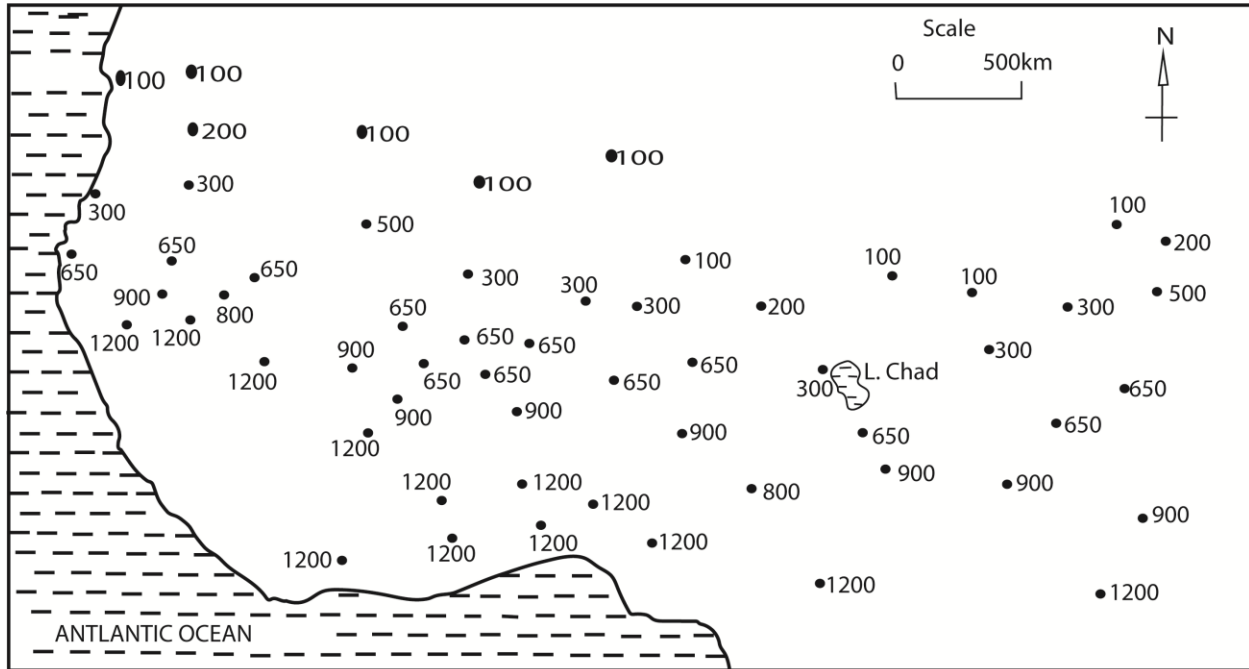
- Diversifies the economy
- Promotes trade cooperation
- Used in improving the transport sector
- Stimulates industrial development
- Leads to urbanization
- Stimulates agriculture production through stimulating agro industries
- Promotes tourism
- Provides employment
- Source of foreign exchange
- Source of government revenue
- Promote research and mineral exploitation
- Increases the index of development

NB. Candidates should explain the outlined points giving specific examples

9. Study the map below showing the mean annual rainfall figures in millilitres for part of west Africa and answer the questions that follow

.....Please cut here.....

A Sketch map of Annual Rainfall (in mm) for part of West Africa

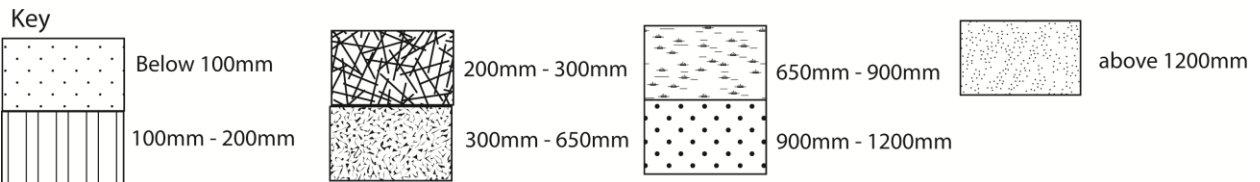
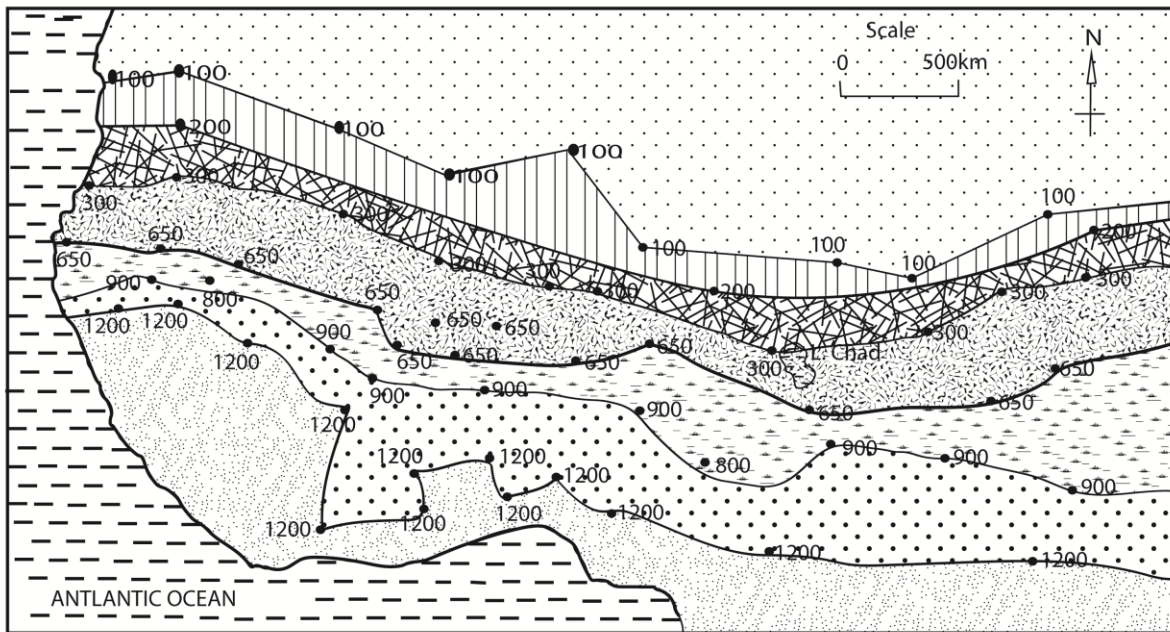


Attach this outline to your answer for question 1

- Draw an isoline map showing rainfall distribution for West Africa
- Outline the merits of using the statistical method in (a) above
- Account for the rainfall distribution shown in the sketch map drawn in (a) above
- Explain the influence of rainfall distribution on human activities in the area shown on the sketch map.

Suggested solutions

An Isoline map showing rainfall distribution for West Africa



(b) Merits

- Good visual impression
- Easy to interpret
- Can be super imposed
- Easy to draw/construct
- Does not involve calculations
- Easy to compare

(c) the rainfall distribution is due to

- Ocean current (Guinea + canary)
- ITCZ/latitudinal location in the equatorial belt
- Continentality/distance from the sea
- Trade winds
- Vegetation
- Relief
- Water bodies
- Man's activities e.g. pastoralism, deforestation

(d) Influence of rainfall to man's activities



Heavy rainfall

- Leads to lumbering due to growth of (equatorial) forests
- Growing of perennial crops in south/plantation farming
- Rivers lead fishing, water transport/HEP generation
- Favors settlement
- Favors wildlife hence tourism
- Favors agriculture and hence industrialization and trade.

Low rainfall

- Favors pastoralism/transhumance
- Encourages irrigation farming
- Favors mining

10. Study the table below showing the percentage of food output for selected African countries (2002) and answer the following questions that follow

Country	Land Area ('000km <sup>2</sup> )	Crops (% of total output)		
		Maize	Cassava	Bananas
Ghana	228	8.4	75.4	16.2
Gabon	258	5.0	43.7	51.3
DRC	2,267	7.0	89.8	3.2
Tanzania	884	30.7	69.3	00

Adapted; 2003 African Development Indicators; World Bank, Washington, DC (pp. 5; 222-225)

- Draw a compound rectangle to portray the information in the table
- Outline the merits and demerits of using the method in (a) above
- Identify the dominant crop grown in the countries given in the table.
  - account for the dominance of the crop identified in (c)(i) above
- Explain the contribution of the agricultural sector to the development of any one country given in the table.

Suggested answers

- A candidate is expected to find the percentages of the total land consumed by each of the country which are plotted on the horizontal axis,  
 Total Land = 228 + 258 + 2,267 + 884 = 3637  
 Percentage of land occupied by each country

$$\text{Ghana} = \frac{228}{3637} \times 100 = 6.3\%$$

$$\text{Gabon} = \frac{258}{3637} \times 100 = 7.1\%$$

$$\text{DRC} = \frac{2,267}{3637} \times 100 = 62.3\%$$

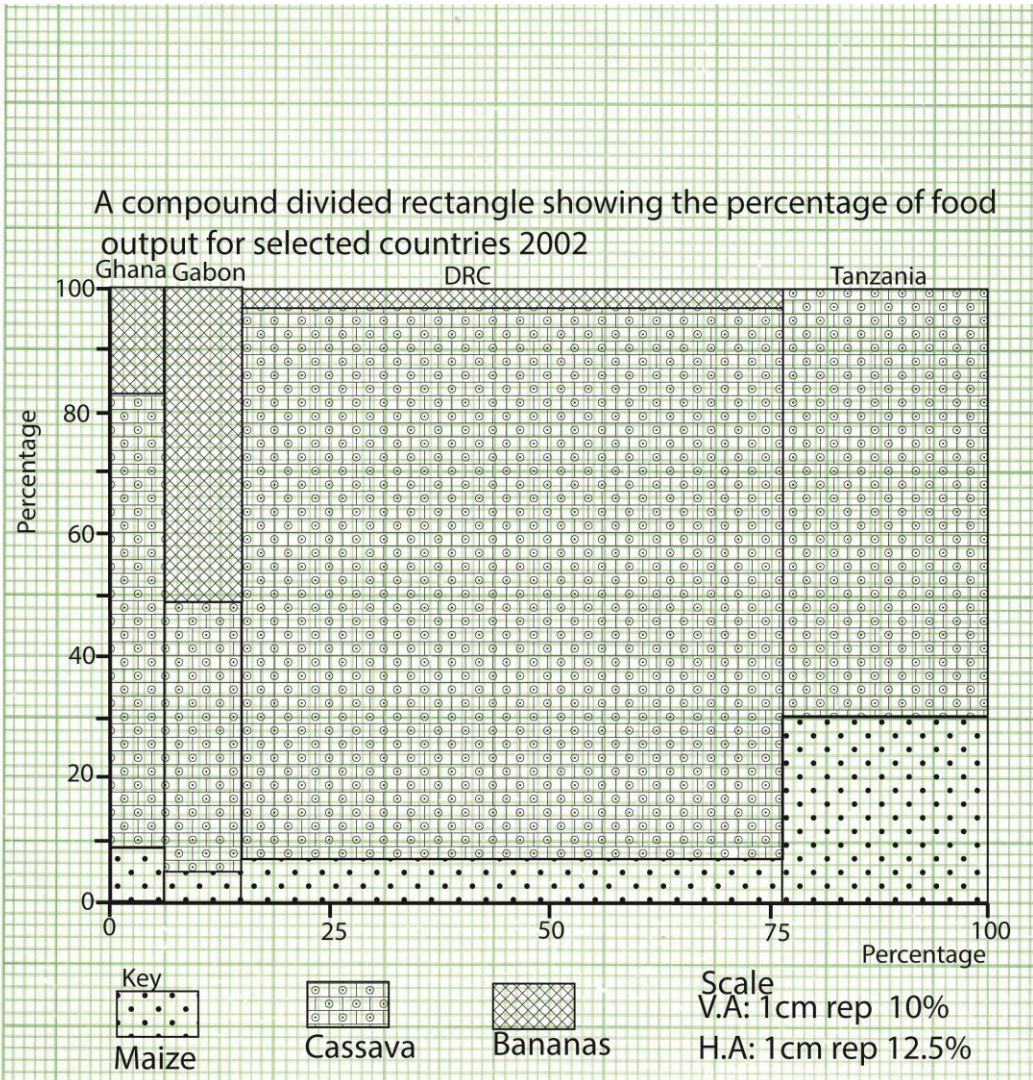
$$\text{Tanzania} = \frac{884}{3637} \times 100 = 24.3\%$$

Table of cumulative frequency of percentages of land

Countries	Ghana	Gabon	DRC	Tanzania
Cumulative Frequency	6.3	13.4	75.7	100

Cumulative percentage of crops is plotted on the vertical axis  
 Table of cummulative percentages of crops

Country	Crops (% of total output)		
	Maize	Cassava	Bananas
Ghana	8.4	75.4	16.2
Cumulative %	8.4	83.8	100
Gabon	5.0	43.7	51.3
Cumulative %	5.0	48.7	100
DRC	7.0	89.8	3.2
Cumulative %	7.0	96.8	100
Tanzania	30.7	69.3	00
Cumulative %	30.7	100	100



(b) Merits include

- Easy to draw/construct
- Easy to interpret
- Easy for comparison
- Can represent many items/variables
- Gives clear visual impression
- Does not involve difficult calculations
- Can be super imposed on other diagrams

Demerits include

- Many items/variables make the diagram congested/difficult to interpret
- In case of large amplitude, finding a suitable scale is difficult
- It does not show actual values
- Time consuming
- Occupies large space

(c) (i) Cassava

(ii)

- Easy to grow
- Can tolerate greater variations in climate
- Can grow on variety of soils
- It is resistant to pests and diseases
- It is the main staple food in Africa
- It does not need a lot of care
- It easily stored in dry form
- 

(d) Candidate should select one country and explain its contribution of agricultural sector to its development, the points are the same

For Ghana

- Source of food for the people
- Source of foreign exchange
- Provides employment to the people
- Provide raw materials to agro industries
- Encourages development of transport network
- Promote trade and cooperation
- Provide education/research grounds
- Diversifies the economy
- Attracts foreign investors.



11. Study the table below showing annual average fish Export and Imports in thousands of US \$ for selected countries (1998- 2000) and answer the questions that follow

Country	Exports (‘000s US \$)	Imports (‘000s US \$)
Angola	10,800	14,300
Ghana	81,100	97,300
Peru	852,200	15,400
Republic of south Africa	259,000	64,100
Sweden	472,000	688,900
Total	1,675,100	880,000

Adapted: world Resources (2002 – 2004): Decisions for the Earth; Balance, Voice and Power: UNDP. UNEP, World Bank & World Resources Institute pp 266- 7

- Draw a combined proportional divided semi-circle pie-chart to portray the information in the table
- What are the merits of using the statistical method in (a) above?
- Identify the with the
  - Highest fish export value
  - Lowest fish import value
- Account for the development of the fishing industry in the country identified in (c)(i) above.

Suggested solution

Calculation

$$\text{Area} = \pi r^2$$

Area = Total export/Imports

Export

$$\pi r^2 = 1,675,100$$

$$r = \sqrt{\frac{1,675,100}{3.14}} = 730$$

Imports

$$r = \sqrt{\frac{880,000}{3.14}} = 529$$

Scale: let 1cm represent 100units

$$\text{For export, } r = \frac{730}{100} = 7.3\text{cm}$$

$$\text{For imports, } r = \frac{529}{100} = 5.3\text{cm}$$

## Covertng to degrees

### Export

$$\text{Angola} = \frac{10,800}{1,675,100} \times 180 = 1^{\circ}$$

$$\text{Ghana} = \frac{81,100}{1,675,100} \times 180 = 9^{\circ}$$

$$\text{Peru} = \frac{852,200}{1,675,100} \times 180 = 91.6^{\circ}$$

$$\text{Republic of South Africa} = \frac{259,000}{1,675,100} \times 180 = 28^{\circ}$$

$$\text{Sweden} = \frac{472,000}{1,675,100} \times 180 = 50.7^{\circ}$$

### Imports

$$\text{Angola} = \frac{14,300}{880000} \times 180 = 3^{\circ}$$

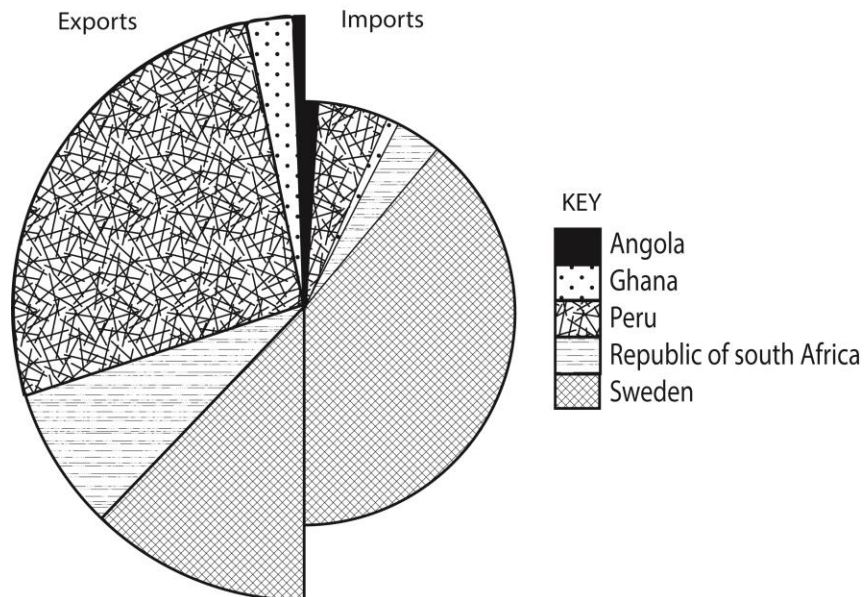
$$\text{Ghana} = \frac{973,000}{880000} \times 180 = 20^{\circ}$$

$$\text{Peru} = \frac{15,400}{880000} \times 180 = 3^{\circ}$$

$$\text{Republic of South Africa} = \frac{64,100}{880000} \times 180 = 13^{\circ}$$

$$\text{Sweden} = \frac{688,900}{880000} \times 180 = 141^{\circ}$$

A combined proportional divided semi-circle pie-chart annual average fish  
Export and Imports for selected countries (1998- 2000)



(b) Merits

- Gives a good visual impression
- Easy to read and understand
- Good for comparison purposes
- Can represent many variables/veratile
- Easyto draw/construct
- Easy to interpret

(c)(i) Sweden

(ii) Angola

(d)

- Availability/ abundance fish varieties
- Large forest reserves that provide timber for making boats
- Market for fish from european countries
- Presence of Baltic seaprovides sheltered water for fish breeding and multiplication
- High level of technology
- Improved research
- Skilled and unskilled labour for fish industry
- Favorable government policy
- Favorable political climate
- Efficient transport networks
- Availability of capital to invest in fish industry
- Fish provide nutritious food

Thank you  
Dr. Bbosa Science