Practical Work in Geography Class 12 Solutions Chapter 3 Graphical Representation of Data

Class 12 Practical Work in Geography Chapter 3 NCERT Textbook Questions Solved

1. Choose the right answer from the four alternatives given below:

Question1(i). Which one of the following map shows the population distribution? (a) Choropleth maps (b) Isopleth maps (c) Dot maps (d) Square root map Answer: (c) Dot maps Question1(ii). Which one of the following is best suited to represent the decadal growth of population? (a) Line graph (b) Bar diagram (c) Circle diagram (d) Flow diagram Answer: (a) Line Graph Question1(iii). Polygraph is constructed to represent: (a) Only one variable (b) Two variables only (c) More than two variables (d) None of the above Answer: (c) More than two variables Question1(iv). Which one of the following maps is known as "Dynamic Map"? (a) Dot map (b) Choropleth (c) Isopleth (d) Flow map Answer: (d) Flow map

2. Answer the following questions in about 30 words:

Question 2(i).

What is a thematic map?

Answer:

Maps drawn to study a particular theme like rainfall, temperature, soil type, etc. is called a thematic map. Thematic maps, graphs and diagrams serve a useful purpose in providing a comparison between the internal variations within the data of different characteristics represented.

Question 2(ii).

Differentiate between multiple bar diagram and compound bar diagram.

Answer:

Multiple Bar Diagram: Multiple bar diagrams are constructed to represent two or more than two variables for the purpose of comparison.

For example, we can draw two bars one indicating literacy rate of males and other literacy rate of females.

Compound Bar Diagram: When different components are grouped in one set of variables or different variables of one component are put together, their representation is made by a compound bar diagram. In this method, different variables are shown in a single bar with different rectangles.

For example, total electricity produced in India is sub-divided into hydro power, thermal power, nuclear power, etc.

Question 2(iii).

What are the requirements to construct a dot map?

Answer:

The dot maps are drawn to show the distribution of phenomena such as population, cattle, types of crops, etc. The dots of same size as per the chosen scale are marked over the given administrative units to highlight the patterns of distribution.

Requirements:

- An administrative map of the given area showing state/district/block boundaries.
- Statistical data on selected theme for the chosen administrative units, i.e. total population, cattle, etc.
- Selection of a scale to determine the value of a dot.
- Physiographic map of the region especially relief and drainage maps.

Precautions:

- The lines demarcating the boundaries of various administrative units should not be very thick and bold.
- All dots should be of same size.

Question 2(iv).

Describe the method of constructing a traffic flow map.

Answer:

Traffic flow map is a combination of graph and map. It is drawn to show the flow of commodities or people between the places of origin and destination. It is also called Dynamic Map. Transport map, which shows number of passengers, vehicles, etc., is the best example of a flow chart. These charts are drawn using lines of proportional width. Many government agencies prepare traffic flow maps to show density of the means of transportation on different routes.

Methods for the Preparation of a Traffic Flow Map:

- A route map depicting the desired transport routes along with the connecting stations.
- The data pertaining to the flow of goods, services, number of vehicles, etc. along with the point of origin and destination of the movements.
- The selection of a scale through which the data related to the quantity of passengers and goods or the number of vehicles is to be represented.

Question 2(v).

What is an Isopleth map? How an interpolation is carried out? Answer:

The word Isopleth is derived from Iso meaning equal and pleth means lines. Thus, an imaginary line, which joins the places of equal values, is referred as Isopleth. The more frequently drawn isopleths include Isotherm (equal temperature), Isobar (equal pressure), Isohyets (equal rainfall), Isonephs (equal cloudiness), Isohels (equal sunshine), contours (equal heights), Isobaths (equal depths), Isohaline (equal salinity), etc. Interpolation is used to insert the intermediate values between the observed values of two stations/locations, such as temperature recorded at Chennai and Hyderabad or the spot heights of two points. Generally, drawing of isopleths joining the places of the same value is also termed as interpolation.

Methods of Interpolation:

- Firstly, determine the minimum and maximum values given on the map.
- Calculate the range of value, i.e. range = maximum value minimum value.
- Based on range, determine the interval in a whole number like 5, 10, 15, etc.
- The exact point of drawing an isopleth is determined by using the following formula

Point of Isopleth = Distance between two points in cm_____ × Interval Difference between the two values of corresponding points

Question 2(vi).

Describe and illustrate important steps to be followed in preparing a Choropleth map. Answer:

The Choropleth maps are drawn to prepare the characteristics of data as they are related

to the administrative units. These means are used to represent the literacy rate, sex ratio and density of population.

Steps to be followed:

- Arrange the data in ascending or descending order.
- Group the data into 5 categories to represent very high, high, medium, low and very low concentrations.
- The interval between the categories may be identified on the following formula, i.e. Range/5 and Range = maximum value minimum value.
- Patterns, shades or colour to be used to depict the chosen categories should be marked in an increasing or decreasing order.

Original Data on Literacy in India						
SI.No.	States/Union territories	Literacy Rate				
1.	Jammu 8s Kashmir	55.5				
2.	Himachal Pradesh	76.5				
3.	Punjab	69.7				
4.	Chandigarh	81.9				
5.	Uttarakhand	71.6				
6.	Haryana	67.9				
7.	Delhi	81.7				
8.	Rajasthan	60.4				
9.	Uttar Pradesh	56.3				
10.	Bihar	47.0				
11.	Sikkim	68.8				
12.	Arunachal Pradesh	54.3				
13.	Nagaland	66.6				
14.	Manipur	70.5				
15.	Mizoram	88.8				
16.	Tripura	73.2				
17.	Meghalaya	62.6				
18.	Assam	63.3				
19.	West Bengal	68.6				

20.	Jharkhand	53.6
21.	Odisha	63.1
22.	Chhattisgarh	64.7
23.	Madhya Pradesh	63.7
24.	Gujarat	69.1
25.	Daman & Diu	78.2
26.	Dadra 8s Nagar Haveli	57.6
27.	Maharashtra	76.9
28.	Andhra Pradesh	60.5
29.	Karnataka	66.6
30.	Goa	82.0
31.	Lakshadweep	86.7
32.	Kerala	90.9
33.	Tamil Nadu	73.5
34.	Puducherry	81.2
35.	Andaman & Nicobar Islands	81.3

Original Data on Literacy in India						
SI.No.	States/Union territories	Literacy Rate				
10.	Bihar	47.0				
20.	Jharkhand	53.6				
12.	Arunachal Pradesh	54.3				
01.	Jammu 8s Kashmir	55.5				
9.	Uttar Pradesh	56.3				
26.	Dadra 8s Nagar Haveli	57.6				
08.	Rajasthan	60.4				
28.	Andhra Pradesh	60.5				
17.	Meghalaya	62.6				
21.	Odisha	63.1				

1		
18.	Assam	63.3
23.	Madhya Pradesh	63.7
22.	Chhattisgarh	64.7
13.	Nagaland	66.6
29.	Karnataka	66.6
06:	Haryana	67.9
19.	West Bengal	68.6
11.	Sikkim	68.8
24.	Gujarat	69.1
03.	Punjab	69.7
14.	Manipur	70.5
05.	Uttarakhand	71.6
16.	Tripura	73.2
33.	Tamil Nadu	73.5
02.	Himachal Pradesh	76.5
27.	Maharashtra	76.9
25.	Daman & Diu	78.2
34.	Puducherry	81.2
35.	Andaman & Nicobar Islands	81.3
07.	Delhi	81.7
04.	Chandigarh	81.9
30.	Goa	82.0
31.	Lakshadweep	86.7
15.	Mizoram	88.8
32.	Kerala	90.9

Construction:

• Arrange the data in ascending order as shown above.

- Identify the range within the data. The states recording the lowest and highest literacy rates are Bihar (47%) and the Kerala (90.9%) respectively. Hence, the range would be 91.0 47.0 = 44.0.
- Divide the range by 5 to get categories from very low to veiy high. (44.0/ 5 = 8.80. We can convert this value to a round number say 9.0.
- Determine the number of the categories along with range of each category. Add 9.0 to the lowest value of 47.0 as so on.

Following categories will be obtained:

(i) 47 – 56
Very low (Bihar, Jharkhand, Arunachal Pradesh, Jammu and Kashmir)
(ii) 56 – 65
Low (Uttar Pradesh, Rajasthan, Andhra Pradesh, Meghalaya, Odisha, Assam, Madhya Pradesh, Chhattisgarh)
(iii) 65 – 74
Medium (Nagaland, Karnataka, Haryana, West Bengal, Sikkim, Gujarat, Punjab, Manipur, Uttarakhand, Tripura, Tamil Nadu)
(iv) 74 – 83
High (Himachal Pradesh, Maharashtra, Delhi, Goa)
(v) 83 – 92
Very High (Mizoram, Kerala)

Assign the shades/pattern to each category ranging from lower to higher hues



Question 2(vii).

Construct a pie chart with this information.

Students in an adult school were surveyed about the type of transport they use to travel to school.

The results were:

Walking 3, Train 6, Tram 9, Car 10, Bicycle 12.

pie chart

Total Population of Students=40

Transport Type	Number of Students	Percentage of students preferring transport type	Angle size for Pie Chart
Walking	3	$\frac{3}{40} \times 100 = 7.5\%$	7.5% of 360 ° = 27°
Train	6	$\frac{6}{40} \times 100 = 15\%$	15% of 360 ° = 54°
Tram	9	$\frac{9}{40} \times 100 = 22.5\%$	22.5% of 360 ° = 81°
Car	10	$\frac{10}{40} \times 100 = 25\%$	25% of 360 ° = 90°
Bicycle	12	$\frac{12}{40} \times 100 = 30\%$	30% of 360 ° = 108°

Total Population of Students=40



ACTIVITY

Question 1.

Represent the following data with the help of suitable diagram.

Year	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
Decennial growth (%)	0.35	8.27	19.12	31.97	41.42	26.41	38.23	46.14	36.47	31.13

Answer:

Range of the data = 46.14 - 0.35=45.79

Line graph will be the right method to present these data.



Question 2.

Represent the following data with the help of suitable diagram. India: Literacy and Enrolment Ratio in Primary and Upper Primary Schools

Year	E Rat	nrolmen tio Prim	nt ary	Enrolment Ratio Upper Primary					
	Person	Male	Female	Male	Female	Total	Male	Female	Total
1950-51	18.3	27.2	8.86	60.6	25	42.6	20.6	4.6	12.7
1999-2000	65.4	75.8	54.2	104	85	94.9	67.2	50	58.8

Answer:

L	iterac,	y and l	Enr	olme	nt R	atio	in F	rim	ary a	and	Upp	er Pı	rimary Schools
	110					otal	2	e a					1999-2000
	90					Ĕ		Femal					1950-1951
	80-	-	Mal		_	21	81				ale		
0	-70-	Tota		ale	-	H	61	88		tal	ž	- 0-	
atic	-60	-	61	Fen		1	-	63		1	11	Fem	
<u>م</u>	-50-		81			1							
	-40-		61	88				63		100		1	
	-30		81								63		
	20	1.1			-							68	
	10	-		1									
	-0	Li	ter	acy		Eni in F	oln rin cho	nent hary ol	E -Uj	nro opei S	lme r Pr cho	nt i ima ol	n ry

Question 3. Represent the following data with help of pie-diagram. India: Land use 1951-2001

Answer:

Year	1950-51	1998-2001
Culturable Waste Land	. 8	5
Pasture and Tree	9	5
Fallow Land	10	8
Forest	14	22
Not available for cultivation	17	14
Net Sown Area	42	46



Question 4.

Study the table given below and draw the given diagrams/maps. Area and Production of Rice in Major States

States	Area in 000 ha	% to total area	Production . 000 tones	% to total Production
Bihar	3,671	8.3	5,417	6.4
Tamil Nadu	2,113	4.8	7,218	8.5
Punjab	2,611	5.9	9,154	10.8
Andhra Pradesh	4,028	9.1	12,428	13.5
Uttar Pradesh	5,839	13.2	11,540	13.6
West Bengal	5,435	12.3	12,428	14.6

Construct a multiple bar diagram to show area under rice in each state.

Construct a pie-diagram to show the percentage of area under rice in each state.

Construct a dot map to show the production of rice in each state.

Construct a Choropleth map to show the percentage of production of rice in states. Answer:

(a)



(b)

(c)





(d)



Question 5.

Show the following data of temperature and rainfall of Kolkata with a suitable diagram.

Months	Temperature in ⁰ C	Rainfall in cm
Jan.	19.6	1.2
Feb.	22.0	2.8
Mar.	27.1	3.4
Apr.	30.1	5.1
May	30.4	13.4
June	29.9	29.0
Jul.	28.9	33.1
Aug.	28.7	33.4
Sep.	28.9	25.3
Oct.	27.6	12.7

Nov.	23.4	2.7	
Dec.	19.7	0.4	

Answer:



Class 12 Practical Work in Geography Chapter 3 NCERT Extra Questions

Class 12 Practical Work in Geography Chapter 3 Very Short Answer Type Questions

Question 1.

What are data? How are these important?

Answer:

Numerical and quantitative measurement of geographical events, human activities and their interrelationship are called data. In other words, quantitative information is called datum. Therefore, data are also called quantitative information.

Question 2.

What is the Chinese proverb in context of diagrams, graphs and maps?

Answer:

There is a Chinese proverb that 'a picture is equivalent to thousands of words'. Hence, the graphic method of the representation of data enhances our understanding, and makes the comparisons easy.

Question 3. Why is statistics needed?

Answer:

Statistics are used by geographers, economists, statisticians, resource scientists, planners, decision-makers and some other persons who need to do comparative study and to derive findings.

Question 4.

What are the general rules related to construction of graphs, maps and diagrams? Answer: General rules for drawing graphs, maps and drawing are:

(a) Selection of a Suitable Method

(b) Selection of Suitable Scale

(c) Design: It includes title, legend, and direction.

Question 5.

Name the most commonly used graphs and maps.

Answer:

The most commonly drawn diagrams and maps and the way they are constructed are:

- (a) Line graphs
- (b) Bar diagrams
- (c) Pie-diagram
- (d) Wind rose and star diagram
- (e) Flow charts

Question 6.

When are thematic maps drawn?

Answer: Thematic maps, graphs and diagrams serve a useful purpose in providing a comparison between the internal variations within the data of different characteristics represented.

Question 7. What are different types of quantitative thematic maps? Answer: There are three types of quantitative thematic maps:

(a) Dot map(b) Choropleth map(c) Isopleth map

Question 8. What are dot maps? Answer:

The dot maps are drawn to show the distribution of phenomena such as population, cattle, types of crops, etc. The dots of same size as per the chosen scale are marked over the given administrative units to highlight the patterns of distribution.

Question 9. What are choropleth maps? Answer:

The choropleth maps are also drawn to depict the data characteristics as they are related to the administrative units. These maps are used to represent the density of population, literacy/growth rates, sex-ratio, etc.

Question 10. What are more frequently drawn isopleths? Answer: The more frequently drawn isopleths include isotherm (equal temperature), isobar (equal pressure), isohyets (equal rainfall), isonephs (equal cloudiness), isohels (equal sunshine), contours (equal heights), isobaths (equal depths), isohaline (equal salinity), etc.

Question 11.

Why is a flow map called a dynamic map?

Answer:

Flow map is drawn to show the flow of commodities or people between the places of origin and destination. Since it shows many variables together and deals with flow phenomenon, it is also called dynamic map.

Class 12 Practical Work in Geography Chapter 3 Short Answer Type Questions

Question 1.

In how many categories are maps and graphs used to present data? Answer:

The diagrams and the maps to represent data can be grouped into the following types: (a) One-dimensional diagrams such as line graph, polygraph, bar diagram, histogram, age, sex, pyramid, etc.;

(b) Two-dimensional diagram such as pie-diagram and rectangular diagram;

(c) Three-dimensional diagrams such as cube and spherical diagrams.

Question 2.

What do you mean by isopleth?

Answer:

The word Isopleth is derived from. Iso means equal and pleth means lines. Thus, an imaginary line, which joins the places of equal values, is referred to as isopleth. The more frequently drawn isopleths include isotherm (equal temperature), isobar (equal pressure), isohyets (equalrainfall), isonephs (equal cloudiness), isohels (equal sunshine), contours (equal heights), isobaths (equal depths), isohaline (equal salinity), etc.

Question 3.

What is a line graph? For which type of data are they used?

Answer:

In line graph data are presented using a line on graph paper. The line graphs are usually drawn to represent the time series data related to the temperature, rainfall, population growth, birth rates and death rates.

More than one variable can also be presented through line graph to do a comparative analysis. For example, temperature and pressure of an area can be presented in the same graph to make a comparison.

Class 12 Practical Work in Geography Chapter 3 Long Answer Type Questions

Question 1.

How are data presented using ploygraphs?

Answer:

Polygraph is a line graph in which two or more than two variables are shown by an equal number of lines for an immediate comparison, such as the growth rate of different crops

like rice, pulses or the birth rates and life expectancy or sex ratio in different states or countries. A different line pattern such as straight line(____), broken line (___) dotted line(....) or a combination of dotted and broken line (...–...) or line of different colours may be used to indicate the value of different variables.

States/UT			Years		2001
	1961	1971	1981	1991	
Delhi	785	801	808	827	821
Haryana f.V '	868	867	870	86	846
Uttar Pradesh	907	876	882	876	898



Question 2.

Define and construct a line graph to represent the growth rate of population in India during 1901-2001.

Answer:

The line graph is drawn to represent the time series data related to temperature, rainfall, population growth, birth rates, etc.

Year	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001
Growth rate (in %)		0.56	-0.30	1.04	1.33	1.25	1.96	2.20	2.22	2.14	1.93



Question 3. Draft a multiple bar diagram.

Answer:

Multiple bar diagram is constructed to represent two or more than two variables for the purpose of comparison.

Year	Literacy Rate				
	Total Population	Male	Female		
1951	18.33	27.16	8.86		
1961	28.3	40.4	15.35		
1971	34.45	45.96	21.97		
1981	43.57	56.38	29.76		
1991	52.21	64.13	39.29		
2001	64.84	75.85	54.16		





Question 1. In which case histogram is prepared? Answer: Continuous series

Question 2.

In what type of graph comparison among the class frequencies is possible?

Answer:

Histogram

Question 3.

Data represented through a histogram can help in finding graphically which measure of central tendency?

Answer:

Mode

Question 4. Histogram is drawn on what? Answer: Graph paper

Question 5. To find the number of observations less than any given value, we use what type of frequency? Answer: Cumulative frequency distribution.

Question 6. While preparing time series graph, we show which variable on the X-axis? Answer: Time Question 7. By which type of graph Mode is found graphically? Answer: Histogram

Question 8.

A simple frequency distribution of a discrete variable is represented by what? Answer:

Line Graph

Question 9.

How is a frequency polygon obtained?

Answer: By constructing a frequency histogram and linking the mid-points from a frequency histogram.

Question 10.

Ogives can be helpful in locating graphically which measure of central tendency? Answer:

Median

Question 11.

Ogive curve can be drawn for which type of frequency?

Answer:

For More than type distribution and Less than type distribution of commulative frequency.

Question 12.

In which graph the breadth of a rectangle is equal to the length of the class-interval? Answer: Histogram

Question 13. What are Dot maps?

Answer:

The dot maps are drawn to show the distribution of phenomena such as population, cattle, types of crops, etc. The dots of same size as per the chosen scale are marked over the given administrative units to highlight the patterns of distribution.

Question 14. What is Choropleth Map? Answer:

Choropleth maps are also drawn to depict the data characteristics as they are related to the administrative units. These maps are used to represent the density of population, literacy/growth rates, sex-ratio, etc.

Question 15. What is an Isopleth Map? Answer: The word Isopleth is derived from Iso means equal and pleth means lines. Thus, an imaginary line, which joins the places of equal values, is referred to as Isopleth. The more frequently drawn isopleths include Isotherm (equal temperature), Isobar (equal pressure), Isohyets (equal rainfall), Isonephs (equal cloudiness), Isohels (equal sunshine), contours (equal heights), Isobaths (equal depths), Isohaline (equal salinity), etc.

Graphical Representation of Data Notes

- Data can be presented either in text or tabular or semi-tabular or diagrams or graphs or pictures. Diagrams and graphs are more efficient than any other method. Graphs and charts occupy an important place in statistical analysis and inferences. Data are dry and dull for most of the people. It becomes attractive and impressive through diagrammatic and graphical presentation.
- The transformation of data through visual methods like graphs, diagrams, maps and charts is called representation of data.
- Data can be compared and meaningful results can be derived from well-organised and presented data.
- The geographers, economists, resource scientists and the decision-makers use a lot of data these days. Besides the tabular form, the data may also be presented in some graphic or diagrammatic form.
- There is a Chinese proverb that 'a picture is equivalent to thousands of words'. Hence, the graphic method of the representation of data enhances our understanding, and makes the comparisons easier.
- In Geography, we use presentation of data to understand the patterns of population growth, distribution and the density, sex ratio, age-sex composition, occupational structure, etc. within a geographical territory.
- General rules for drawing graphs, maps and drawing are: (a) Selection of a Suitable Method
 - (b) Selection of Suitable Scale
 - (c) Design—It includes title, legend, and direction.
- The data possess measurable characteristics such as length, width and volume. The diagrams and the maps that are drawn to represent these data related characteristics may be grouped into the following types:

(a) One-dimensional diagrams such as Line Graph, polygraph, bar diagram, histogram, age, sex, pyramid, etc.

(b) Two-dimensional diagrams such as pie diagram and rectangular diagram.

- (c) Three-dimensional diagrams such as cube and spherical diagrams.
- The most commonly drawn diagrams and maps and the way they are constructed are:
 - (a) Line graphs
 - (b) Bar diagrams
 - (c) Pie diagram
 - (d) Wind rose and star diagram
 - (e) Flow charts

• Thematic maps, graphs and diagrams serve a useful purpose in providing a comparison between the internal variations within the data of different characteristics represented.

Graphical Representation of Data Important Terms

- Title: The title of the diagram/map indicates the name of the area, reference year of the data used and the caption of the diagram. These components are represented using letters and numbers of different font sizes and thickness. Besides, their placing also matters. Normally, title, subtitle and the corresponding year are shown in the centre at the top of the map /diagram.
- Legend: A legend or index is an important component of any diagram/map. It explains the colours, shades, symbols and signs used in the map and diagram. It should also be carefully drawn and must correspond to the contents of the map/diagram. Besides, it also needs to be properly positioned. Normally, a legend is shown either at the lower left or lower right side of the map sheet.
- Line Graph: The line graphs are usually drawn to represent the time series data related to the temperature, rainfall, population growth, birth rates and death rates.
- Multiple Bar Diagram: Multiple bar diagrams are constructed to represent two or more than two variables for the purpose of comparison.
- Compound Bar Diagram: When different components are grouped in one set of variable or different variables of one component are put together, their representation is made by a compound bar diagram. In this method, different variables are shown in a single bar with different rectangles.
- Quantitative Maps: Maps depicting quantitative variables like areas receiving more than 200 cm, 100 to 200 cm, 50 to 100 cm and less than 50 cm of rainfall are referred as quantitative maps. These maps are also called statistical maps.
- Qualitative Maps: Map depicting non-measurable characteristics in the distribution of given information such as a map showing high and low rainfall-receiving areas are called non quantitative maps. These maps are also called qualitative maps.
- Dot maps: The dot maps are drawn to show the distribution of phenomena such as population, cattle, types of crops, etc. The dots of same size as per the chosen scale are marked over the given administrative units to highlight the patterns of distribution.
- Choropleth Map: The choropleth maps are also drawn to depict the data characteristics as they are related to the administrative units. These maps are used to represent the density of population, literacy/growth rates, sex-ratio, etc.
- Isopleth Map: The word 'Isopleth' is derived from Iso means equal and pleth means lines. Thus, an imaginary line, which joins the places of equal values, is referred as Isopleth. The more frequently drawn Isopleths include Isotherm (equal temperature), Isobar (equal pressure), Isohyets (equal rainfall), Isonephs (equal cloudiness), Isohels (equal sunshine), contours (equal heights), Isobaths (equal depths), Isohaline (equal salinity), etc.