

NCERT Solutions for 9th class Maths : Chapter 14 Statistics

Class 9: Maths Chapter 14 solutions. Complete Class 9 Maths Chapter 14 Notes.

NCERT Solutions for 9th class Maths : Chapter 14 Statistics

NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions

Page No: 239

Exercise 14.1

1. Give five examples of data that you can collect from your day-to-day life.

Answer

Five examples from day-to-day life:

- (i) Daily expenditures of household.
- (ii) Amount of rainfall.
- (iii) Bill of electricity.
- (iv) Poll or survey results.
- (v) Marks obtained by students.

2. Classify the data in Q.1 above as primary or secondary data.

Answer

- Primary Data: (i) (iii) and (v)
- Secondary Data: (ii) and (iv)
- NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions

Page No: 245

Exercise 14.2

1. The blood groups of 30 students of Class VIII are recorded as follows:

A, B, O, O, AB, O, A, O, B, A, O, B, A, O, O,

A, AB, O, A, A, O, O, AB, B, A, O, B, A, B, O.

Represent this data in the form of a frequency distribution table. Which is the most common, and which is the rarest, blood group among these students?

Answer

The frequency means the number of students having same blood group. We will represent the data in table:



EIndCareer

Blood
GroupNumber of Students
(Frequency)A9B6O12AB3Total30

Most common Blood Group (Highest frequency): O

Rarest Blood Group (Lowest frequency): AB

2. The distance (in km) of 40 engineers from their residence to their place of work were found as follows:

5 3 10 20 25 11 13 7 12 31 19 10 12 17 18 11 32 17 16 2 7 9 7 8 3 5 12 15 18 3 12 14 2 9 6 15 15 7 6 12

Construct a grouped frequency distribution table with class size 5 for the data given above taking the first interval as 0-5 (5 not included). What main features do you observe from this tabular representation?

Answer

The given data is very large. So, we construct a group frequency of class size 5. Therefore, class interval will be 0-5, 5-10, 10-15, 15-20 and so on. The data is represented in the table as:



Distances (in km)	Tally marks	Frequency
0 - 5	ΓN	5
5 - 10		11
10 - 15		11
15 - 20		9
20 - 25		1
25 - 30		1
30 - 35	11	2
Total	A.4	40

The classes in the table are not overlapping. Also, 36 out of 40 engineers have their house below 20 km of distance.

3. The relative humidity (in %) of a certain city for a month of 30 days was as follows:

98.1	98.6	99.2	90.3	86.5	95.3	92.9	96.3	94.2	95.1
89.2	92.3	97.1	93.5	92.7	95.1	97.2	93.3	95.2	97.3
96.2	92.1	84.9	90.2	95.7	98.3	97.3	96.1	92.1	89

(i) Construct a grouped frequency distribution table with classes 84 - 86, 86 - 88, etc.

(ii) Which month or season do you think this data is about?

(iii) What is the range of this data?

Answer

(i) The given data is very large. So, we construct a group frequency of class size 2. Therefore, class interval will be 84-86, 86-88, 88-90, 90-92 and so on. The data is represented in the table as:

Relative humidity (in y %)



©IndCareer

84-86	1
86-88	1
88-90	2
90-92	2
92-94	7
94-96	6
96-98	7
98-100	4
Total	30

(ii) The humidity is very high in the data which is observed during rainy season. So, it must be rainy season.

(iii) Range of data = Maximum value of data - Minimum = 99.2 - 84.9 = 14.3

4. The heights of 50 students, measured to the nearest centimetres, have been found to be as follows:

161	150	154	165	168	161	154	162	150	151	
162	164	171	165	158	154	156	172	160	170	
153	159	161	170	162	165	166	168	165	164	
154	152	153	156	158	162	160	161	173	166	
161	159	162	167	168	159	158	153	154	159	

(i) Represent the data given above by a grouped frequency distribution table, taking the class intervals as 160 - 165, 165 - 170, etc.

(ii) What can you conclude about their heights from the table?

Answer



Career

(i) The data with class interval 160-165, 165-170 and so on is represented in the table as:

Height (in cm)	No. of Students (Frequency)
150-155	12
155-160	9
160-165	14
165-170	10
170-175	5
Total	50

(ii) From the given data, it can be concluded that 35 students i.e. more than 50% are shorter than 165 cm.

NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions

5. A study was conducted to find out the concentration of sulphur dioxide in the air in parts per million (ppm) of a certain city. The data obtained for 30 days is as follows:

0.03	0.08	0.08	0.09	0.04	0.17
0.16	0.05	0.02	0.06	0.18	0.20
0.11	0.08	0.12	0.13	0.22	0.07
0.08	0.01	0.10	0.06	0.09	0.18
0.11	0.07	0.05	0.07	0.01	0.04

(i) Make a grouped frequency distribution table for this data with class intervals as 0.00 - 0.04, 0.04 - 0.08, and so on.



@IndCareer

(ii) For how many days, was the concentration of sulphur dioxide more than 0.11 parts per million?

Answer

(i) The data with class interval 0.00 - 0.04, 0.04 - 0.08 and so on is represented in the table as:

Concentration of sulphur dioxide in air (in ppm)	Frequenc y
0.00 - 0.04	4
0.04 - 0.08	9
0.08 - 0.12	9
0.12 - 0.16	2
0.16 - 0.20	4
0.20 - 0.24	2
Total	30

(ii) 2 + 4 + 2 = 8 days have the concentration of sulphur dioxide more than 0.11 parts per million.

Page No. 246

6. Three coins were tossed 30 times simultaneously. Each time the number of heads occurring was noted down as follows:

0	1	2	2	1	2	3	1	3	0	
1	3	1	1	2	2	0	1	2	1	
3	0	0	1	1	2	3	2	2	0	

Prepare a frequency distribution table for the data given above.



Answer

The frequency distribution table for the data given above can be prepared as follow:

Number of Heads	Frequenc y
0	6
1	10
2	9
3	5
Total	30

7. The value of π upto 50 decimal places is given below:

3.14159265358979323846264338327950288419716939937510

- (i) Make a frequency distribution of the digits from 0 to 9 after the decimal point.
- (ii) What are the most and the least frequently occurring digits?

Answer

(i)The frequency is given as follow:

Digits	Frequency
0	2
1	5
2	5
3	8



4	4
5	5
6	4
7	4
8	5
9	8
Total	30

(ii) The digit having the least frequency occurs the least and the digit with highest frequency occurs the most. 0 has frequency 2 and thus occurs least frequently while 3 and 9 have frequency 8 and thus occur most frequently.

8. Thirty children were asked about the number of hours they watched TV programmes in the previous week. The results were found as follows:

1	6	2	3	5	12	5	8	4	8
10	3	4	12	2	8	15	1	17	6
3	2	8	5	9	6	8	7	14	12

(i) Make a grouped frequency distribution table for this data, taking class width 5 and one of the class intervals as 5-10.

(ii) How many children watched television for 15 or more hours a week?

Answer

(i) The distribution table for the given data, taking class width 5 and one of the class intervals as 5-10 is as follows:

Frequenc Number of y Hours



0-5	10
5-10	13
10-15	5
15-20	2
Total	30

(ii) We observed from the given table that 2 children television for 15 or more hours a week.

NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions

9. A company manufactures car batteries of a particular type. The lives (in years) of 40 such batteries were recorded as follows:

2.6	3.0	3.7	3.2	2.2	4.1	3.5	4.5	
3.5	2.3	3.2	3.4	3.8	3.2	4.6	3.7	
2.5	4.4	3.4	3.3	2.9	3.0	4.3	2.8	
3.5	3.2	3.9	3.2	3.2	3.1	3.7	3.4	
4.6	3.8	3.2	2.6	3.5	4.2	2.9	3.6	

Construct a grouped frequency distribution table for this data, using class intervals of size 0.5 starting from the interval 2 - 2.5.

Answer

A grouped frequency distribution table using class intervals of size 0.5 starting from the interval 2 - 2.5 is constructed.

	No. of
Lives of batteries (in	batteries
years)	(Frequency)

2-2.5 2



2.5-3	6
3-3.5	14
3.5-4	11
4-4.5	4
4.5-5	3
Total	40

Page No. 258

NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions

Exercise 14.3

1. A survey conducted by an organisation for the cause of illness and death among the women between the ages 15 - 44 (in years) worldwide, found the following figures (in %):

S.No	Causes	Female fatality rate (%)
1.	Reproductive health conditions	31.8
2.	Neuropsychiatric conditions	25.4
3.	Injuries	12.4
4.	Cardiovascular conditions	4.3
5.	Respiratory conditions	4.1
6.	Other causes	22.0

(i) Represent the information given above graphically.

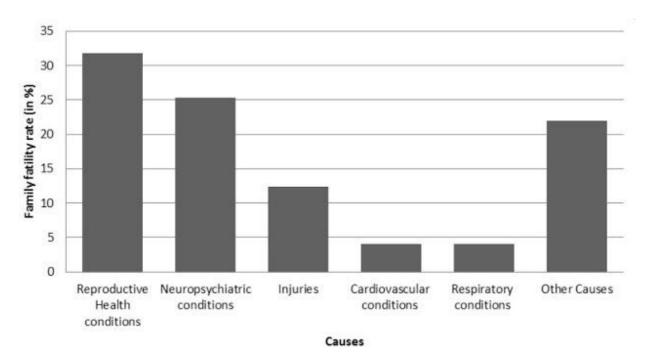


(ii) Which condition is the major cause of women's ill health and death worldwide?

(iii) Try to find out, with the help of your teacher, any two factors which play a major role in the cause in (ii) above being the major cause.

Answer





(ii) From the above graphical data, we observe that reproductive health conditions is the major cause of women's ill health and death worldwide.

- (iii) Two factors responsible for cause in (ii)
- Lack of proper care and understanding.
- Lack of medical facilities.

2. The following data on the number of girls (to the nearest ten) per thousand boys in different sections of Indian society is given below.



@IndCareer

S.No	Section	Number of girls per thousand boys
1.	Scheduled Caste (SC)	940
2.	Scheduled Tribe (ST)	970
3.	Non SC/ST	920
4.	Backward districts	950
5.	Non-backward districts	920
6.	Rural	930
7.	Urban	910

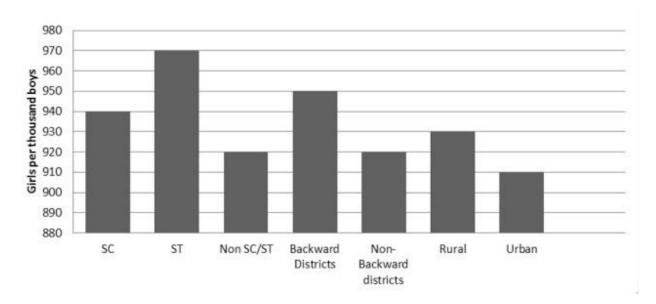
(i) Represent the information above by a bar graph.

(ii) In the classroom discuss what conclusions can be arrived at from the graph.

Answer

(i)





(ii) It can be observed from the above graph that the maximum number of girls per thousand boys is in ST. Also, the backward districts and rural areas have more number of girls per thousand boys than non-backward districts and urban areas.

Page No. 59

3. Given below are the seats won by different political parties in the polling outcome of a state assembly elections:

Political party	A	В	С	D) E	E F	=
Seats won	75	55	37	29	10	37	

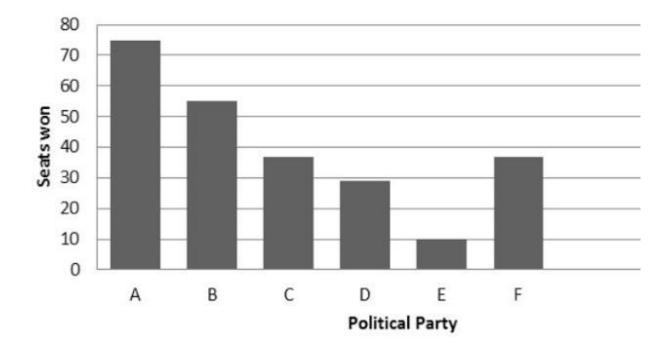
(i) Draw a bar graph to represent the polling results.

(ii) Which political party won the maximum number of seats?

Answer

(i)





(ii) The party named A has won the maximum number of seat.

4. The length of 40 leaves of a plant are measured correct to one millimetre, and the obtained data is represented in the following table:

S.No	Length (in mm)	Number of leaves
1.	118 - 126	3
2.	127 - 135	5
3.	136 - 144	9
4.	145 - 153	12
5.	154 - 162	5
6.	163 - 171	4
7.	172 - 180	2



EIndCareer

(i) Draw a histogram to represent the given data. [Hint: First make the class intervals continuous]

(ii) Is there any other suitable graphical representation for the same data?

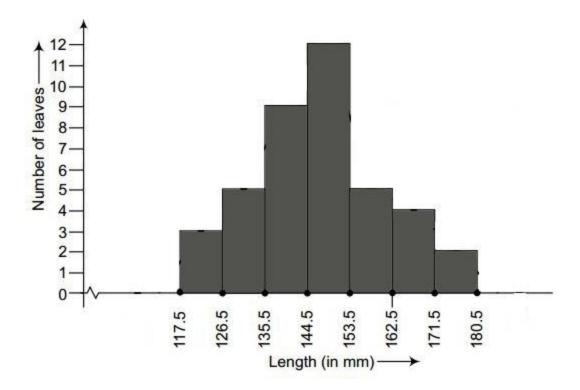
(iii)Is it correct to conclude that the maximum number of leaves are 153 mm long? Why?

Answer

(i) The data is represented in a discontinuous class interval. So, first we will make continuous. The difference is 1, so we subtract 1/2 = 0.5 from lower limit and add 0.5 to the upper limit.

S.No	Length (in mm)	Number of leaves
1.	117.5 - 126.5	3
2.	126.5 - 135.5	5
3.	135.5 - 144.5	9
4.	144.5 - 153.5	12
5.	153.5 - 162.5	5
6.	162.5 - 171.5	4
7.	171.5 - 180.5	2





(ii) Yes, the data can also be represented by frequency polygon.

(iii) No, it is incorrect to conclude that the maximum number of leaves are 153 mm long because maximum number of leaves are lying between the length of 144.5 - 153.5

5. The following table gives the life times of 400 neon lamps:

Life Time (in hours)	Number of lamps
300 - 400	14
400 - 500	56
500 - 600	60
600 - 700	86
700 - 800	74



800 - 900 62

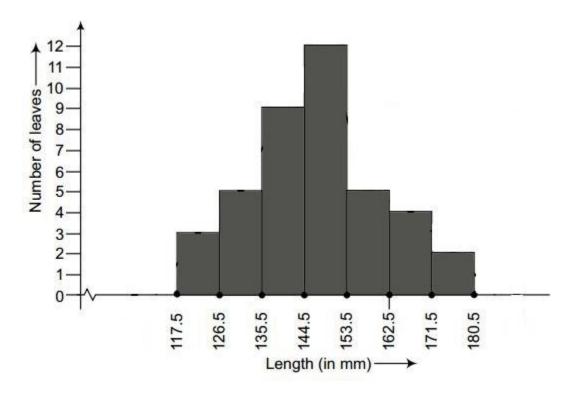
900 - 1000 48

(i) Represent the given information with the help of a histogram.

(ii) How many lamps have a life time of more than 700 hours?

Answer

(i)



(ii) 74 + 62 + 48 = 184 lamps have a life time of more than 700 hours.

Page No. 260

NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions

6. The following table gives the distribution of students of two sections according to the marks obtained by them:



Section A		Section B		
Marks	Frequency	Marks	Frequency	
0 - 10	3	0 - 10	5	
10 - 20	9	10 - 20	19	
20 - 30	17	20 - 30	15	
30 - 40	12	30 - 40	10	
40 - 50	9	40 - 50	1	

Represent the marks of the students of both the sections on the same graph by two frequency polygons. From the two polygons compare the performance of the two sections.

Answer

The class mark can be found by (Lower limit + Upper limit)/2.

For section A,

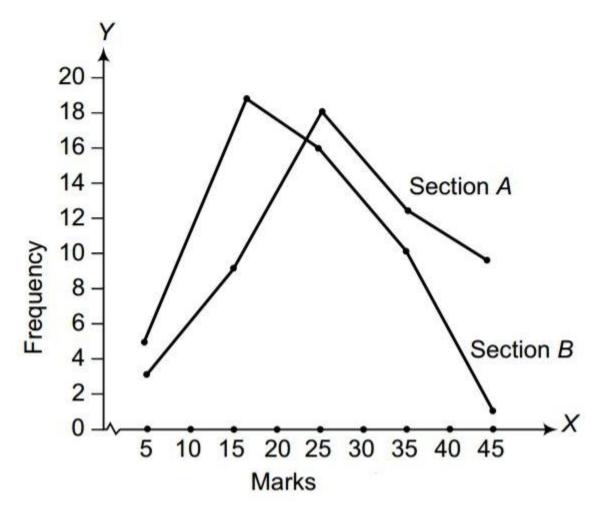
Mark s	Class Mark	Frequenc y
0-10	5	3
10-20	15	9
20-30	25	17
30-40	35	12
40-50	45	9

For section B,



Mark s	Class Mark	Frequenc y
0-10	5	5
10-20	15	19
20-30	25	15
30-40	35	10
40-50	45	1

Now, we draw frequency polygon for the given data.





EIndCareer

7. The runs scored by two teams A and B on the first 60 balls in a cricket match are given below:

Number of balls	Team A	Team B
1-6	2	5
7-12	1	6
13 - 18	8	2
19-24	9	10
25 - 30	4	5
31 - 36	5	6
37 - 42	6	3
43 - 48	10	4
49 - 54	6	8
55-60	2	10

Represent the data of both the teams on the same graph by frequency polygons.

[Hint : First make the class intervals continuous.]

Answer

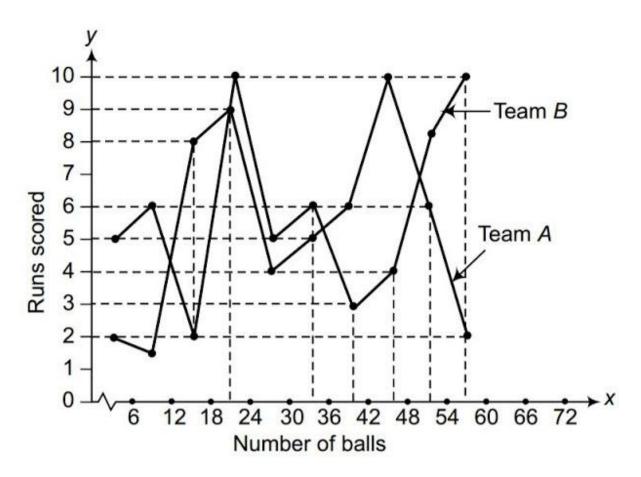
The data is represented in a discontinuous class interval. So, first we will make continuous. The difference is 1, so we subtract 1/2 = 0.5 from lower limit and add 0.5 to the upper limit.

Number of balls	Team A	Team B
0.5-6.5	2	5
6.5-12.5	1	6
12.5-18.5	8	2



18.5-24.5	9	10
24.5-30.5	4	5
30.5-36.5	5	6
36.5-42.5	6	3
42.5-48.5	10	4
48.5-54.5	6	8
54.5-60.5	2	10

Now, we draw frequency polygon for the given data.



Page No. 261

NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions <u>https://www.indcareer.com/schools/ncert-solutions-for-9th-class-maths-chapter-14-statistics/</u>



EIndCareer

8. A random survey of the number of children of various age groups playing in a park was found as follows:

Age (in years)	Number of children
1 - 2	5
2-3	3
3 - 5	6
5 - 7	12
7 - 10	9
10 - 15	10
15 - 17	4

Draw a histogram to represent the data above.

Answer

The class intervals in the data is having varying width. We know that the area of rectangle is proportional to the frequencies in the histogram. The class interval with minimum class size 1 is selected and the length of the rectangle is proportionate to it.

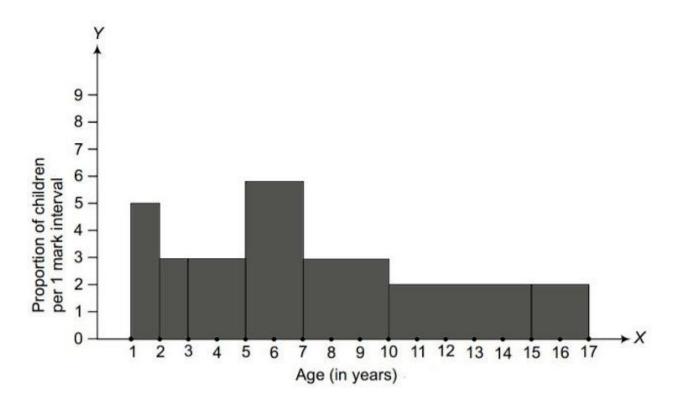
Age (in years)	Number of children (frequency)	Width of class	Length of rectangle
1-2	5	1	(5/1)×1 = 5
2-3	3	1	(3/1)×1 = 3
3-5	6	2	(6/2)×1 = 3
5-7	12	2	(12/2)×1 = 6
7-10	9	3	(9/3)×1 = 3



©IndCareer

10-15	10	5	(10/5)×1 = 2
15-17	4	2	(4/2)×1 = 2

Taking the age of children on x-axis and proportion of children per 1 year interval on y-axis, the histogram can be drawn



9. 100 surnames were randomly picked up from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:



Number of letters	Number of surnames
1 - 4	6
4 - 6	30
6 - 8	44
8 - 12	16
12 - 20	4

(i) Draw a histogram to depict the given information.

(ii) Write the class interval in which the maximum number of surnames lie.

Answer

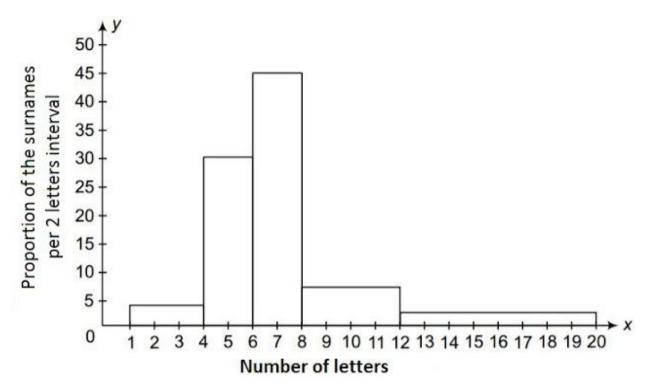
(i) The class intervals in the data is having varying width. We know that the area of rectangle is proportional to the frequencies in the histogram. The class interval with minimum class size 2 is selected and the length of the rectangle is proportionate to it.

The proportion of the surnames per 2 letters interval can be calculated as:

Number of letters	Number of surnames	Width of class	Length of rectangle
1-4	6	3	(6/3)×2 = 4
4-6	30	2	(30/2)×2 = 30
6-8	44	2	(44/2)×2 = 44
8-12	16	4	(16/4)×2 = 8
12-20	4	8	(4/8)×2 = 1



©IndCareer



(ii) The class interval in which the maximum number of surnames lie is 6-8.

Page No. 269

Exercise 14.4

1. The following number of goals were scored by a team in a series of 10 matches:

2, 3, 4, 5, 0, 1, 3, 3, 4, 3

Find the mean, median and mode of these scores.

Answer

Mean = Sum of all the observations/Total number of observations

= (2+3+4+5+0+1+3+3+4+3)/10 = 28/10 = 2.8

For Median, we will arrange the given data in ascending order,

0, 1, 2, 3, 3, 3, 3, 4, 4, 5



Number of observations (n) = 10

Number of observations are even so we will calculate median as,

$$\begin{aligned} \text{Median} &= \frac{\left(\frac{n}{2}\right) \text{th observation} + \left(\frac{n}{2} + 1\right) \text{th observation}}{2} \\ &= \frac{\left(\frac{10}{2}\right) \text{th observation} + \left(\frac{10}{2} + 1\right) \text{th observation}}{2} \\ &= \frac{5 \text{th observation} + 6 \text{th observation}}{2} \end{aligned}$$

= (3+3)/2 = 6/2 = 3

For Mode, we will arrange the given data in ascending order, we have

0, 1, 2, 3, 3, 3, 3, 4, 4, 5.

Here, 3 occurs most frequently (4 times)

: Mode = 3

2. In a mathematics test given to 15 students, the following marks (out of 100) are recorded:

41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60

Find the mean, median and mode of this data.

Answer

Mean = Sum of all the observations/Total number of observations

= (41+39+48+52+46+62+54+40+96+52+98+40+42+52+60)/15 = 822/15 = 54.8

For Median, we will arrange the given data in ascending order,

39, 40, 40, 41, 42, 46, 48, 52, 52, 52, 54, 60, 62, 96, 98



©IndCareer

Number of observations (n) = 15

Number of observations are odd so we will calculate median as,

Median =
$$\left(\frac{n+1}{2}\right)$$
th observation
= $\left(\frac{15+1}{2}\right)$ th observation
= 8th observation
= 52

For Mode, we will arrange the given data in ascending order, we have

39, 40, 40, 41, 42, 46, 48, 52, 52, 52, 54, 60, 62, 96, 98

Here, 52 occurs most frequently (3 times)

: Mode = 52

3. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of x.

29, 32, 48, 50, x, x+2, 72, 78, 84, 95

Answer

Number of observations (n) = 10 (even)

Median =
$$\frac{\left(\frac{n}{2}\right) \text{th observation} + \left(\frac{n}{2} + 1\right) \text{th observation}}{2}$$
$$= \frac{\left(\frac{10}{2}\right) \text{th observation} + \left(\frac{10}{2} + 1\right) \text{th observation}}{2}$$
$$= \frac{5 \text{th observation} + 6 \text{th observation}}{2}$$
$$= \frac{x + (x + 2)}{2} = x + 1$$

According to question, Median = 63



∴ x + 1 = 63

⇒ x = 63−1 = 62

Hence, the value of x is 62.

4. Find the mode of 14, 25, 14, 28, 18, 17, 18, 14, 23, 22, 14, 18.

Answer

The given data is,

14,25,14,28,18,17,18,14,23,22,14,18

Arranging the data in ascending order,

14, 14, 14, 17, 18, 18, 18, 22, 23, 25, 28

Here, 14 occurs most frequently (4 times). Mode = 14

5. Find the mean salary of 60 workers of a factory from the following table:

Salary (in `)	Number of workers
3000	16
4000	12
5000	10
6000	8
7000	6
8000	4
9000	3
10000	1
Total	60

Answer

	Number of workers	f _i x _i
Salary	(f _i)	• •
(X _i)		



@IndCareer

3000	16	48000
4000	12	48000
5000	10	50000
6000	8	48000
7000	6	42000
8000	4	32000
9000	3	27000
10000	1	10000
Total	$\Sigma f_i = 60$	Σf _i x _i = 305000

$$\overline{x}$$
 (mean) = $\frac{\sum_{i} f_{i} x_{i}}{\sum_{i} f_{i}} = \frac{305000}{60} = ₹5083.33$

Hence, the mean salary is ₹5083.33

6. Give one example of a situation in which

(i) the mean is an appropriate measure of central tendency.

(ii) the mean is not an appropriate measure of central tendency but the median is an appropriate measure of central tendency.

Answer

(i) Mean marks in a test in mathematics.

(ii) Average beauty

Chapter 14 Statistics Class 9 Maths NCERT Solutions will help you in understanding the concepts in a better way. Statistics deals with collection, organisation, analysis and



interpretation of data. It deals with the collection, presentation, analysis of data as well as drawing of meaningful conclusions from the data.

• Collection of Data: When the information was collected by the investigator herself or himself with a definite objective in her or his mind, the data obtained is called primary data. In the second case, when the information was gathered from a source which already had the information stored, the data obtained is called secondary data.

• Presentation of Data: Presenting data in this form simplifies and condenses data and enables us to observe certain important features at a glance. This is called a grouped frequency distribution table.

• Graphical Representation of Data: The graphical representation makes data easier to understand than the actual data. Bar graphs, Histograms of uniform width, and of varying widths and Frequency polygons are some of the graphical representations in this section.

• Measures of Central Tendency: The mean (or average) of a number of observations is the sum of the values of all the observations divided by the total number of observations. The median is that value of the given number of observations, which divides it into exactly two parts.

There are total 4 exercises in the **Chapter 14 Statistics NCERT Solutions** which will useful in developing your problem solving skills and learning diverse topics. We have also prepared exercisewise NCERT Solutions which you can find them below.

Indcareer Schools subject matter experts have curated these questions which will help in revising the chapter properly. These NCERT Solutions will guide student in a better way and useful in learning efficiently.

NCERT Solutions for Class 9 Maths Chapters:

FAQ on Chapter 14 Statistics

What are the benefits of NCERT Solutions for Chapter 14 Statistics Class 9 NCERT Solutions?

These NCERT Solutions are updated as per the latest guidelines introduced by CBSE and will improve the learning behaviour of the students. It will be quite helpful in gaining good marks in the examinations.



Career

Find the range of the data 9, 7, 5, 7, 9, 9, 6, 18, 9 and 8.

Highest data = 18

Lowest data = 5

 \Rightarrow Range = 18 – 5 = 13.

What do you mean by grouped data?

The data condensed into groups or classes are called grouped data.

What is the class-mark of the class 130 – 150?

```
Class-mark = ((130+150)/2)
```

= (280/2)

= 140.

NCERT 9th Maths Chapter 14, class 9 Maths Chapter 14 solutions





@IndCareer

Chapterwise NCERT Solutions for Class 9 Maths :

- <u>Chapter 1 Number System</u>
- <u>Chapter 2 Polynomials</u>
- Chapter 3 Coordinate Geometry
- <u>Chapter 4 Linear Equations in Two Variables</u>
- <u>Chapter 5 Introduction to Euclid's Geometry</u>
- Chapter 6 Lines and Angles
- <u>Chapter 7 Triangles</u>
- <u>Chapter 8 Quadrilaterals</u>
- <u>Chapter 9 Areas of Parallelograms and Triangles</u>
- Chapter 10 Circles
- <u>Chapter 11 Constructions</u>
- Chapter 12 Heron's Formula
- <u>Chapter 13 Surface Areas and Volumes</u>
- <u>Chapter 14 Statistics</u>
- <u>Chapter 15 Probability</u>



IndCareer About NCERT

The National Council of Educational Research and Training is an autonomous organization of the Government of India which was established in 1961 as a literary, scientific, and charitable Society under the Societies Registration Act. The major objectives of NCERT and its constituent units are to: undertake, promote and coordinate research in areas related to school education; prepare and publish model textbooks, supplementary material, newsletters, journals and develop educational kits, multimedia digital materials, etc.Organise pre-service and in-service training of teachers; develop and disseminate innovative educational techniques and practices; collaborate and network with state educational departments, universities, NGOs and other educational institutions; act as a clearing house for ideas and information in matters related to school education; and act as a nodal agency for achieving the goals of Universalisation of Elementary Education. In addition to research, development, training, extension, publication and dissemination activities, NCERT is an implementation agency for bilateral cultural exchange programmes with other countries in the field of school education. Its headquarters are located at Sri Aurobindo Marg in New Delhi. Visit the Official NCERT website to learn more.

