MATHS

BOOKS - MTG IIT JEE FOUNDATION

STATISTICS

Illustrations

1. The number of cars in 20 families are given below:

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

Arrange the data in the form of discrete frequency distribution.

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2. Let the marks obtained by 30 students of a class in a test be 38, 26, 4, 32, 20, 22, 11, 47, 12, 23, 8, 2, 10, 8, 12, 17, 2, 19, 16, 42, 40, 13, 47, 38, 17, 27, 30,

6, 23, 18.

Arrange the data in grouped frequency distribution, using groups 0-10, 10-20 e tc.

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3. 70 students from a locality use different modes of transport to go to school as given below:

Modes of Transport	Car	Bus	Moped	Bicycle	Rickshaw
Number of Students	4	27	11	20	8

Draw the bar graph representing the above data.

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4. Represent the following frequency distribution by means of a histogram.

Marks	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of Students (frequency)	7	11	9	13	16	4	2

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5. Depict the following frequency distribution by a histogram.

Weekly wages (in ₹)	725-750	750-775	775-800	800-825	825-850
Number of workers (frequency)	30	45	75	60	35

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6. The length of 40 leaves of a plant are measured correct to nearest millimetres. The data obtained is as follows :

Length (in mm)	118-126	127-135	136-144	145-153	154-162
Number of leaves	4	6	5	15	10

Draw histogram to represent the given data.

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7. Consider the marks, out of 100, obtained by 50 students of a class given in the table.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Total
Number of Students	4	9	5	7	6	4	2	2	3	8	50

Draw a frequency polygon corresponding to this frequency distribution table using histogram.

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8. The daily pocket expenses of 206 students in a school are given below.

Pocket expenses (in ₹)	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40
Number of Students (frequency)	10	16	30	42	50	30	16	12

Construct a frequency polygon representing the above data.

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9. Draw the frequency polygon representing the following frequency distribution

Class interval	30-34	35-39	40-44	45-49	50-54	55-59
Frequency	12	16	20	8	10	4

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10. Find the mean of the following distribution.

x	3	7	8	11	15
f	5	10	10	7	8

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11. Find the mean of the first six multiples of 3.

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12. Find the mean of the following data.

x	2	4	6	8
Frequency	5	3	6	2

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13. Find the median of the given data : 25, 34, 31, 23, 22, 26, 35, 28, 20, 32

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14. Find the median of the given data : 37, 31, 42, 43, 46, 25, 39, 45, 32

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15. Find the mode from the following data : 110, 120, 130, 120 I 110, 140, 130, 120, 140, 120.

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16. Find the mode for the following data : 2.5, 2.3, 2.2, 2.2 I 2.4, 2.71 2.71 2.51 2.31 2.21 2.61 2.2

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Solved Examples

1. The water tax bills (in rupees) of 30 houses in a locality are given below. Construct a grouped frequency distribution with class size of 10. 30,32,45,54,74,78,108,112,66,76,88,40,14,20,15,35,44,66, 75,84,95,96,102,110,88,74,112,14,34,44

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2. Form a grouped frequency distribution from the following data by inclusive method taking 4 as the class size of class intervals.

31, 23, 19, 29, 22, 20, 16, 10, 13, 34, 38, 33, 28, 21, 15, 18, 36, 24, 18, 15, 12, 30, 27, 23, 20, 17, 14, 32, 26, 25, 18, 29, 24, 19, 16, 11, 22, 15, 17,10

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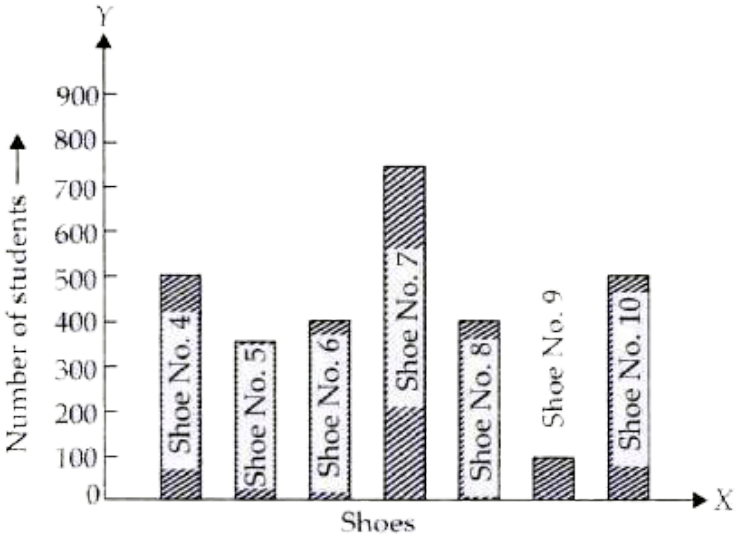
3. Read the bar graph shown in figure and answer the following questions.

What is the information given by the bar graph?



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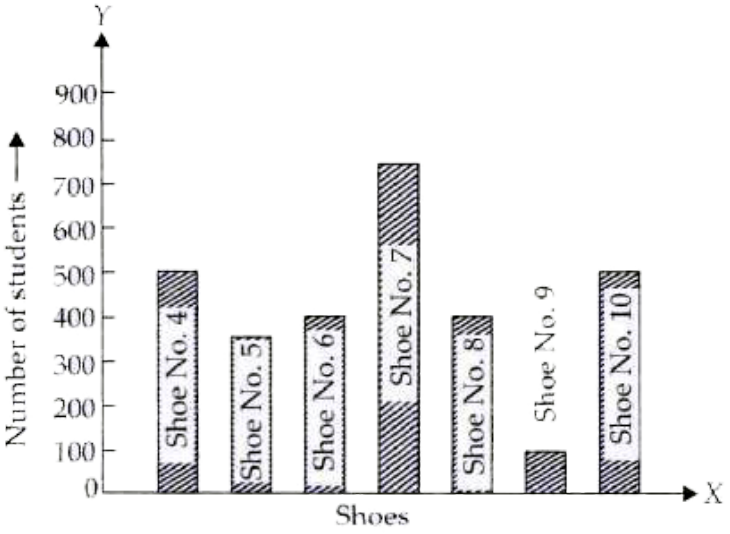
4. Read the bar graph shown in figure and answer the following questions.



What are the different numbers of the shoesworn by the students?

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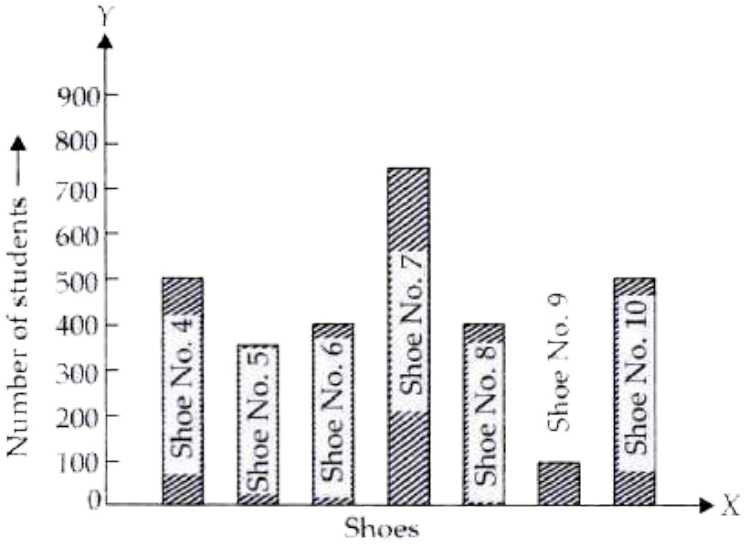
5. Read the bar graph shown in figure and answer the following questions.

Which shoe number is worn by the maximum number of students? Also

give its number



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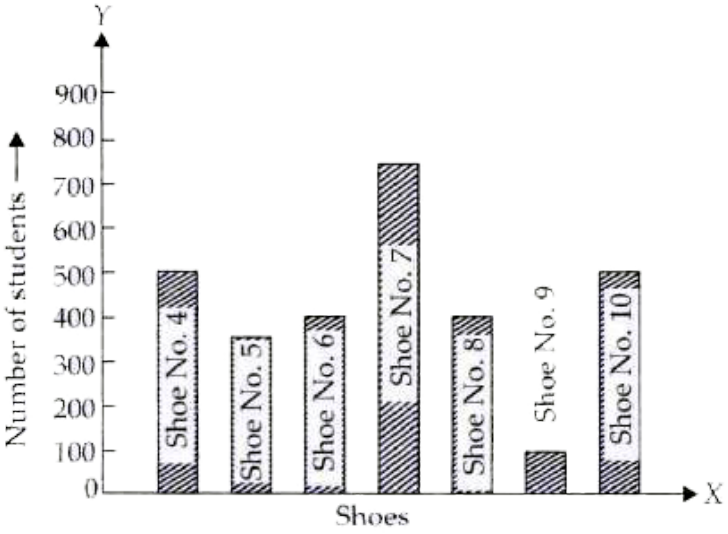
6. Read the bar graph shown in figure and answer the following questions.



Which shoe number is worn by the minimum number of students? Also give its frequency.

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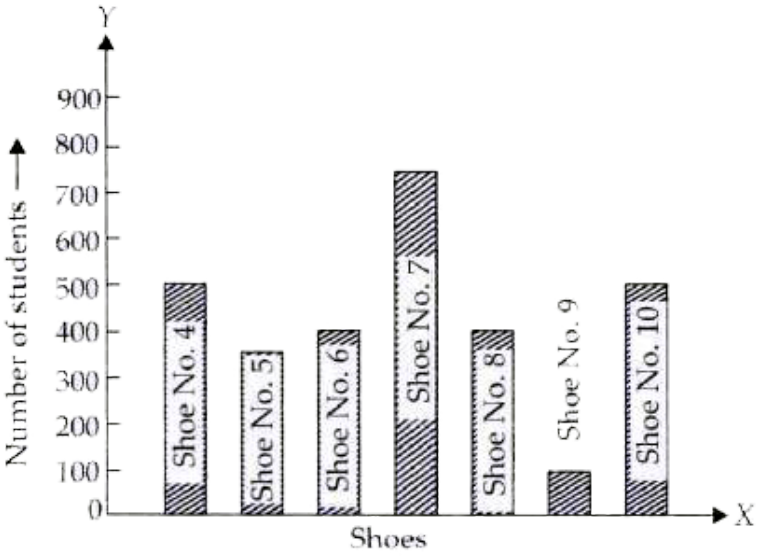
7. Read the bar graph shown in figure and answer the following questions.



The number of students wearing shoe No. 10 is less than three times the number of students wearing shoe No. 9. Is it true ?

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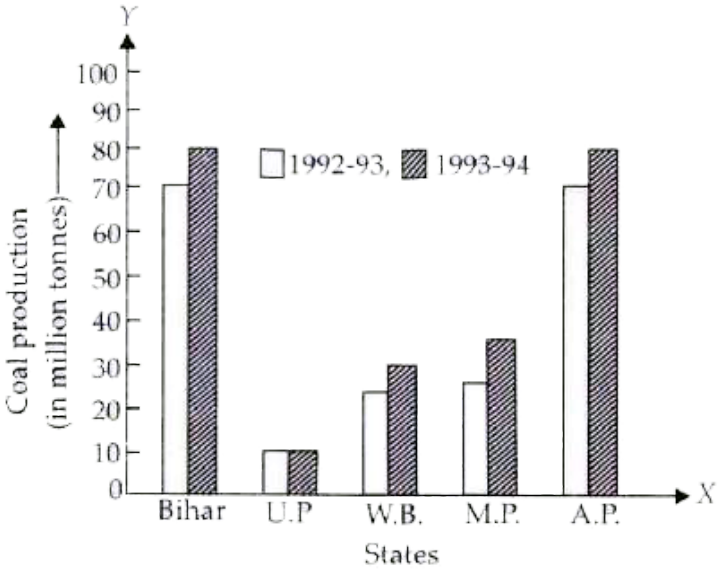
8. Read the following bar graph given in figure and answer the following questions.



(i) What information is given by this bar graph?

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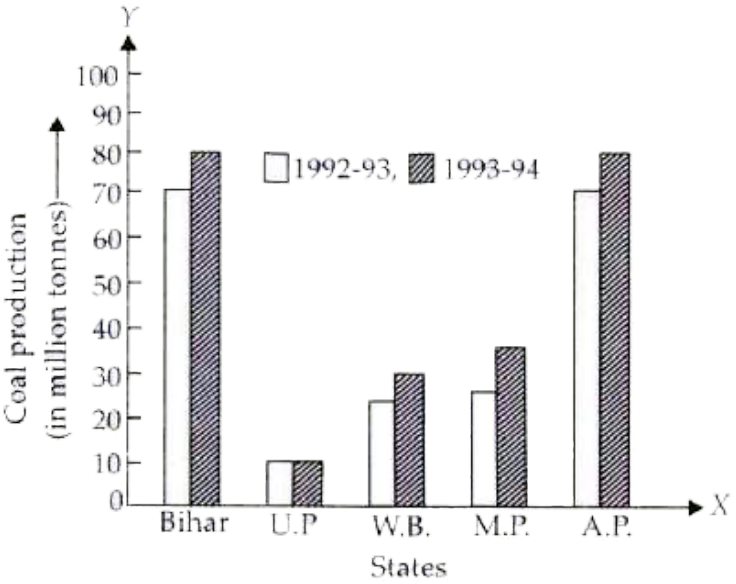
9. Read the following bar graph given in figure and answer the following questions.



Which two states have same production in 1993-94?

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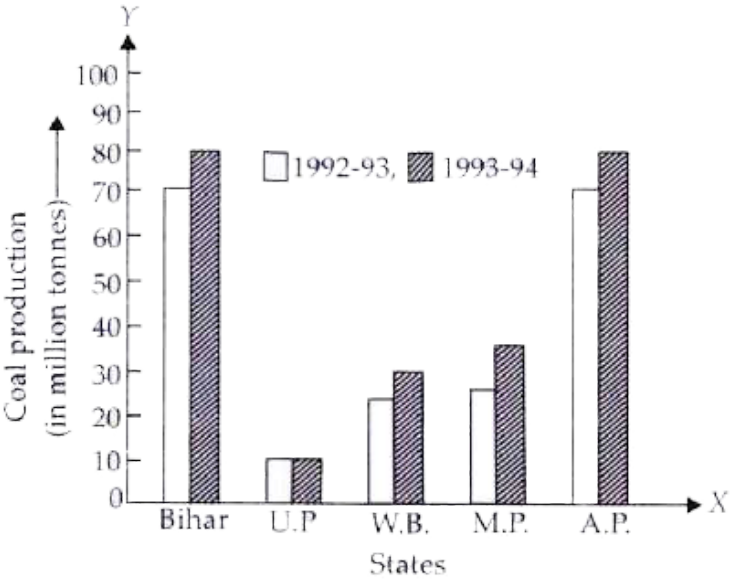
10. Read the following bar graph given in figure and answer the following questions.



Name the state having same production in both the years?

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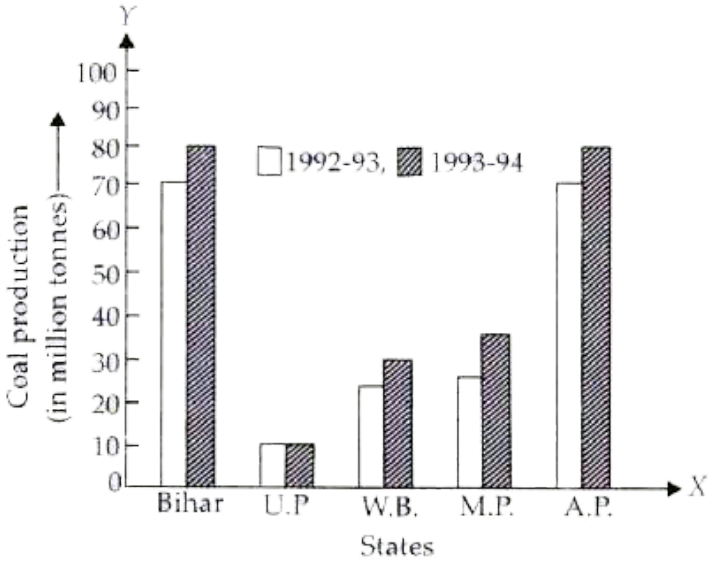
11. Read the following bar graph given in figure and answer the following questions.



Which state has minimum production?

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12. The following table gives the marks scored by 100 students in an entrance examination

Marks	Frequency
0 - 10	4
10 - 20	10
20 - 30	16
30 - 40	22
40 - 50	20
50 - 60	18
60 - 70	8
70 - 80	2

Represent this data in the form of a histogram.

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13. Draw a histogram for the marks of students given below :

Marks	0-10	10-30	30-45	45-50	50-60
No. of students	8	32	18	10	6

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14. The given table presents the number of illiterate males in the age group (10-34) in a town.

Age group	10-14	15-19	20-24	25-29	30-34
No. of males	300	980	800	580	290

Draw a histogram to represent the above data.

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15. For the following data, draw a histogram and a frequency polygon

Marks	No. of students
0 - 10	5
10 - 20	10
20 - 30	4
30 - 40	6
40 - 50	7
50 - 60	3
60 - 70	2
70 - 80	2
80 - 90	3
90 - 100	9

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16. Construct a frequency polygon for the following data.

Age (in years)	Frequency
0 - 2	2
2 - 4	4
4 - 6	6
6 - 8	8
8 - 10	9
10 - 12	6
12 - 14	5
14 - 16	3
16 - 18	1

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17. The mean of 100 items was found to be 30. If at the time of calculation two items were wrongly taken as 32 and 12 instead of 23 and 11, find the correct mean.

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18. The mean of 10 number is 20. If 5 is subtracted from every number, what will be the new mean?

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19. The mean of 16 numbers is 8. If 2 is added to every number, what will be the new mean?

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20. Find the mean of the following distribution.

x	4	6	9	10	15
f	5	10	10	7	8

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21. Find the mean of the following distribution

x	10	30	50	70	89
f	7	8	10	15	10

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22. Find the frequencies in the following frequency distribution if it is known that the mean of the distribution is 1.46.

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23. Find the median of the following data : 25, 34, 31, 23, 22, 26, 35, 29, 20, 32

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24. Find the median of the following data: 41, 43, 127, 99, 61, 92, 71, 58, 57. If 58 is replaced by 85, what will be the new median.

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25. The weights (in kg) of 15 students are : 31, 35, 27, 29, 32, 43, 37, 41, 34, 28, 36, 44, 45, 42, 30. Find the median. If the weight 44 kg is replaced by 46 kg and 27 kg by 25 kg, find the new median.

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26. Find out the mode of the following marks obtained by 15 students in a class.

Marks : 4, 6, 5, 7, 9, 8, 10, 4, 7, 6, 5, 9, 8, 7, 7

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27. Find the mode from the following data: 125, 175, 225, 125, 225, 175, 325, 125, 375, 225, 125

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28. The demand of different shirt sizes, as obtained by a survey, is given below :

Size	38	39	40	41	42	43	44	Total
No. of persons (wearing it)	26	39	20	15	13	7	5	125

Find the mean as observed from the survey .

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Ncert Section Exercise 14 1

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

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2. Classify the data that you can collect from your day-to-day life as primary or secondary data.

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Ncert Section 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 mo

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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?

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

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4. 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

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5. 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

What is the range of this data?

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6. 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

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

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7. 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

What can you conclude about their heights from the table?

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8. A study was conducted to find out the concentration of sulphur dioxide in the air i n 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

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

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9. A study was conducted to find out the concentration of sulphur dioxide in the air i n 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

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

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10. 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.

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11. The value of n up to 50 decimal places is given below:3.14159265358979323846264338327950288419716939937510

(i) Make a frequency distribution of the digits from 0 to 9 after the decimal point.

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12. The value of n up to 50 decimal places is given below:3.14159265358979323846264338327950288419716939937510

What are the most and the least frequently occurring digits?

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13. 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 t

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14. 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

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

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15. 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

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Ncert Section 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

Represent the information given above graphically.

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2. 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

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

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

Section	Number of girls per thousand boys
Scheduled Caste (SC)	940
Scheduled Tribe (ST)	970
Non SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

Represent the information above by a bar graph.

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

Political Party	A	B	C	D	E	F
Seats Won	75	55	37	29	10	37

Which political party won the minimum number of seats?

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

Political Party	A	B	C	D	E	F
Seats Won	75	55	37	29	10	37

Which political party won the maximum number of seats?

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

Length (in mm)	Number of leaves
118 - 126	3
127 - 135	5
136 - 144	9
145 - 153	12
154 - 162	5
163 - 171	4
172 - 180	2

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

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

Length (in mm)	Number of leaves
118 - 126	3
127 - 135	5
136 - 144	9
145 - 153	12
154 - 162	5
163 - 171	4
172 - 180	2

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

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

Length (in mm)	Number of leaves
118 - 126	3
127 - 135	5
136 - 144	9
145 - 153	12
154 - 162	5
163 - 171	4
172 - 180	2

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

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9. 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

Represent the given information with the help of a histogram.

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10. 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

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

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11. 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]

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12. 101 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

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

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Ncert Section 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.

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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.

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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

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

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

$\mathrm{Salary\ (in\ Rs)Number\ of\ workers}3000164000125000106000$

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6. Give one example of a situation in which

The mean is an appropriate measure of central tendency.

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7. Give one example of a situation in which

The mean is not an appropriate measure of central tendency but the median is an appropriate measure of central tendency

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Exercise Multiple Choice Question

1. The range of the data 15, 20, 6, 5, 30, 35, 92, 35, 90, 18, 82 is

A. 87

B. 15

C. 18

D. 26

Answer: A

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2. In the class intervals 30-60, 60-90 the number 90 is included in

A. 60-90

B. 30-60

C. Both in 30-60 and 60-90

D. Neither in 30-60 nor in 60-90

Answer: D

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3. The class marks of a frequency distribution are 15, 20, 25, 30, ... The class corresponding to the class mark 25 is

A. 12.5-17.5

B. 20.5-29.5

C. 18.5-21.5

D. 22.5-27.5

Answer: D

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4. In a frequency distribution, the mid-value of a class is 10 and width of each class is 6. The upper limit of the class is

A. 13

B. 7

C. 8

D. 12

Answer: A

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5. The width of each of the five continuous classes in a frequency distribution is 5 and the upper class limit of the last class is 60. The lower class limit of the lowest class is

A. 45

B. 25

C. 35

D. 40

Answer: C

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6. Let Ube the upper class boundary of a class in a frequency distribution and Mbe the mid-point of the class. Which one of the following is the lower class boundary of the class?

A. M+$\frac{M+L}{2}$

B. L+$M+\frac{L}{2}$

C. $2M-U$

D. M-2L

Answer: C

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7. The mid-value of a class interval is 25 and the class size is 8. The class interval is

A. 37 - 45

B. 21 - 29

C. 36.5 - 44.5

D. 36.5 - 46.5

Answer: B

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8. If the mean of five observations x, x + 4, x + 8, x + 12 and x + 16 is 15, then the value of x is

A. 5

B. 6

C. 7

D. 8

Answer: C

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9. If $\bar{x}$ is the mean of $x_1, x_2, x_3, \ldots\ldots, x_n$, then $\sum_{i=1}^{n}(x_i - \bar{x}) =$

A. $\frac{23}{25}$

B. 0

C. $\frac{28}{25}$

D. $\frac{4}{5}$

Answer: B

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10. If each observation of a data is incre ased by 7, then their mean

A. remains the same

B. becomes 7 times the original mean

C. is decreased by 7

D. is increased by 7

Answer: D

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11. If x is the mean of $x_1, x_2, \ldots . , x_n$, then for $a \neq 0$, the mean of $ax_1, ax_2, \ldots , ax_n, \frac{x_1}{a}, \frac{x_2}{a}, \ldots , \frac{x_n}{a}$ is

A. $\left(a + \frac{1}{a}\right)\bar{x}$

B. $\left(a + \frac{1}{a}\right)\frac{\bar{x}}{2}$

C. $\left(a + \frac{1}{a}\right)\frac{\bar{x}}{n}$

D. $\frac{\left(a + \frac{1}{a}\right)\bar{x}}{2n}$

Answer: B

Watch Video Solution

12. The mean of the marks scored by 40 students was found to be 35. Later on it was discovered that a score of 43 was misread as 34. The

correct mean is

A. 35.2

B. 39.4

C. 39.8

D. 39.2

Answer: A

Watch Video Solution

13. The mean of 90 items was found to be 45. Later on it was discovered that two items were misread as 26 and 19 instead of 62 and 09 respectively. The correct mean is

A. 49

B. 45

C. 45.3

D. 49.3

Answer: C

Watch Video Solution

14. The mean of 53 observations is 36. Out of these observations, the mean of first 27 observations is 32 and that of the last 27 observations is 40. The 27th observation is

A. 23

B. 36

C. 38

D. 40

Answer: B

Watch Video Solution

15. There are 50 numbers. Each number is subtracted from 43 and the mean of the numbers so obtained is found to be 5. The mean of the given numbers is

A. 38

B. 39

C. 48

D. 49

Answer: A

Watch Video Solution

16. The median of the numbers 9, 5, 7, 17, 13, 18, 13, 9, 5, 17, 13, 12, 17 is

A. 7

B. 9

C. 13

D. 15

Answer: C

Watch Video Solution

17. The median of the numbers 45, 34, 65, 48, 93, 54, 22, 86, 45, 87 is

A. 51

B. 49.5

C. 54

D. 56

Answer: A

Watch Video Solution

18. Mode of the data 51, 14, 71, 15, 91, 2, 51, 19, 41, 51, 18, 15, 51 is

A. 51

B. 15

C. 16

D. 17

Answer: A

Watch Video Solution

19. For drawing a frequency polygon of a continuous frequency distribution, we plot the points whose ordinates are the frequencies of the respecitve classes and abscissae are, respectively

A. upper limits of the classes

B. lower limits of the classes

C. class marks of the classes

D. upper limits of preceding classes

Answer: C

Watch Video Solution

20. The marks obtained by 20 students of a class in a test (out of 50) are given below : 40, 44, 45, 46, 50, 42, 41, 8, 26, 28, 9, 32, 24, 6, 42, 36, 39.

The range of the data is

A. 44

B. 54

C. 90

D. 10

Answer: A

Watch Video Solution

21. The class mark of the class 150 - 170 is

A. 130

B. 135

C. 140

D. 160

Answer: D

Watch Video Solution

22. The mean of eight numbers is 40. If one number is excluded, their mean becomes 30. The excluded number is

A. 30

B. 130

C. 110

D. 138

Answer: C

Watch Video Solution

23. The median of the data arranged in ascending order 8, 9, 12, 18, (x + 2), (x + 4), 30, 31, 34, 39 is 24. The value of x is

A. 22

B. 21

C. 20

D. 24

Answer: B

Watch Video Solution

24. The points scored by a kabaddi team in a series of matches are as follows:

8, 24, 10, 14, 5, 15, 7, 2, 17, 27, 10, 7, 48, 8, 18, 28

Find the median of the points scored by the team .

A. 12

B. 14

C. 10

D. 15

Answer: A

Watch Video Solution

25. The marks obtained by 12 students of a class in a test are 36, 27, 5, 19, 34, 23, 37, 23, 16, 23, 20, 38. Find mode.

A. 23

B. 26

C. 20

D. 36

Answer: A

Watch Video Solution

26. Find the mean of the following distribution:

x	5	10	15	20	25
f	4	12	20	28	36

A. 20

B. 25

C. 28

D. 19

Answer: D

Watch Video Solution

27. The class marks of a frequency distribution are 104, 114, 124, 134, 144, 154, 164. Find the class size

A. 10

B. 5

C. 15

D. 19

Answer: A

Watch Video Solution

28. Find the mean of the following marks of 20 students on a screening test (out of 100). 76, 44, 45, 87, 71, 72, 82, 83, 41, 32, 75, 32, 46, 78, 17, 70, 84, 12, 77, 74

A. 59.9

B. 51.5

C. 50

D. 25

Answer: A

Watch Video Solution

29. The maximum temperatures (in degree celcius) for a city in North India for the month of June 2000, as reported by meteorological department are as below:

32.4, 30.3, 31.6, 32.5, 33.5, 28.7, 33.4, 35.6, 36.4, 34.7, 35.2, 30.6, 28.5, 29.4, 30.3, 32.5, 34.6, 35.4, 36.1, 37.2, 28.5, 28.1, 29.2, 31.4, 32.5, 36.2, 35.9, 36.7, 37.2, 36.1.

Find the range

A. $28.1^{\circ}C$

B. $37.2^{\circ}C$

C. $9.1^{\circ}C$

D. $28.5^{\circ}C$

Answer: C

Watch Video Solution

30. The mean of 100 observations is 50. If one of the observations which was 50 is replaced by 150, the resulting mean will be

A. 51

B. 50.5

C. 51.5

D. 52

Answer: A

Watch Video Solution

31. The mean weight of 60 students of a class is 52.75 kg. If mean weight of 25 students of this class is 51 kg, find the mean weight (in kg) of remaining 35 students of the class

A. 54

B. 55

C. 52

D. 50

Answer: A

Watch Video Solution

32. Mean of 20 observations is 17. If observation 40 is replaced by 12, then the new mean is

A. 15

B. 15.6

C. 16

D. None of these

Answer: B

Watch Video Solution

33. Find the median of the following data 95, 65, 75, 70, 75, 100, 50, 40

A. 55

B. 72.5

C. 70

D. 60

Answer: B

Watch Video Solution

34. Themodeofthedata 15, 14, 19,20, 14, 15, 16, l4, 15, 18, 14, 19, 15, 17, 15 is 15.

If last observation is changed to 14, then the new mode is

A. 15

B. 14

C. 16

D. None of these

Answer: B

Watch Video Solution

35. The mean of first seventeen whole numbers is

A. 4

B. 6

C. 8

D. None of these

Answer: C

Watch Video Solution

36. If the mean of 2x, 2x + 3, 2x + 5, 2x + 7, 2x + 10 is 11, the mean of the last three observation is

A. $10\frac{1}{3}$

B. $10\frac{2}{3}$

C. $13\frac{1}{3}$

D. $11\frac{2}{3}$

Answer: C

Watch Video Solution

37. Let $\bar{x}$ be the mean of $x_1, x_2, \ldots . x_3$ and $\bar{y}$ be the mean of $y_1, y_2, \ldots , y_n$. If $\bar{z}$ is the mean of $x_1, x_2, \ldots . , x_n, y_1, y_2, \ldots y_n$, then $\bar{z}$=

A. $(\bar{x} + \bar{y})$

B. $\frac{1}{2}(\bar{x} + \bar{y})$

C. $\frac{1}{n}(\bar{x} + \bar{y})$

D. $\frac{1}{2n}(\bar{x}+\bar{y})$

Answer: B

Watch Video Solution

38. The mean of the following data is 11.

x_i	13	5	7	19	11	13
f_i	6	8	15	p	8	4

The value of p is

A. 11

B. 4

C. 8

D. 4.8

Answer: A

Watch Video Solution

39. Find the mean of the following distribution:

Marks	0 - 10	10 - 20	20 - 30	30 - 40
No. of students	8	11	7	3

A. 19.5

B. 20

C. 20.5

D. None of these

Answer: D

Watch Video Solution

40. Calculate the mode of the following data : 17, 10, 12, 11, 10, 15, 11,14, 11, 12, 13, 11

A. 14

B. 15

C. 10

D. 11

Answer: D

Watch Video Solution

41. The scores (out of 25) of 9 students in a Monday test are 14, 25, 17, 22, 20, 19, 10, 8 and 23. Find the sum of mean score and median score of the data.

A. 35

B. 35.5

C. 36.56

D. 36

Answer: C

Watch Video Solution

42. Four coins were tossed 36 times simultaneously. Each time the numbe r of heads appearing was noted down as below:

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

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

What are the frequencies of 0 and 4 number of heads respectively?

A. 9, 6

B. 6, 6

C. 9, 9

D. 6,9

Answer: B

Watch Video Solution

43. Find the mean of the of following distribution:

x	10	15	20	25	30	35	40	Total
f	4	6	8	18	6	5	3	50

A. 20.3

B. 23.4

C. 24.3

D. 22.4

Answer: C

Watch Video Solution

44. The mean of 12 values of a data is calculated as 19.25. If one more value is included in the data, then for the 13 values of the new data the mean becomes 20. Find the value of 13th observation.

A. 29

B. 30

C. 39

D. 20

Answer: A

Watch Video Solution

45. Find the mode of the data : 14, 6, 9, 15, 14, 9, 21, 21, 25, 21, 27, 29, 21, 8, 6, 15, 25, 14, 21, 9, 21, 25, 27, 29, 6, 14, 21, 21, 27, 25, 27, 9, 15, 14, 9.

A. 22

B. 14

C. 11

D. 21

Answer: D

Watch Video Solution

46. There are 50 numbers. Each number is subtracted from 53 and the mean of the numbers so obtained is found to be -3.5. Find the mean of the given numbers.

A. 56

B. 56.5

C. 55.5

D. None of these

Answer: B

Watch Video Solution

47. Find the missing frequency in the following distribution, if it is known that the mean of the distribution is 50.16

x	10	30	50	70	90
y	17	f_1	32	27	19

A. $f_1 = 27$

B. $f_1 = 23$

C. $f_1 = 34$

D. $f_1 = 30$

Answer: D

Watch Video Solution

48. The monthly salaries of 50 workers in a factory are given below :

Salary (in thousand rupees)	5.2	6.9	8.2	10.5	12.2	14.0
Number of workers	8	9	10	12	6	5

Find the mean salary of workers

A. rs 9,440

B. Rs 9,990

C. Rs 9,098

D. Rs 9,198

Answer: C

Watch Video Solution

49. A batsman in his 10th inning makes a score of 48 runs and thereby increases his average score by 3. What is his average after the 10th inning?

A. 21

B. 20

C. 22

D. None of these

Answer: A

Watch Video Solution

50. The mean of 30 observations of a data was calculated 24.1. At a later stage, we noticed that a value 18.2 was wrongly read as 12.2. Find the value of the correct mean

A. 23

B. 23.3

C. 24

D. 24.3

Answer: D

Watch Video Solution

Exercise Match The Following

1. Match the following

List-I		List-II	
(P)	Mean of first 10 odd prime numbers is	(1)	27.5
(Q)	Mean of first 10 multiples of 5 is	(2)	15.8
(R)	Mean of first 9 doublets of natural numbers is	(3)	11
(S)	Mean of first 10 even numbers is	(4)	55

A. P-1, Q-2, R-3, S-4

B. P-1, Q-2, R-4, S-3

C. P-2, Q-1, R-4, S-3

D. P-2, Q-1, R-3, S-4

Answer: C

Watch Video Solution

2. Match the following :

	List-I		List-II
(P)	Data which is collected for the first time by the statistical investigator with the help of his workers is called	(1)	Secondary data
(Q)	These are the data already collected by a person or a society and these may be in published form. These data should be carefully used.	(2)	Variable
(R)	When the data is compiled in the same form and order in which it is collected, it is known as	(3)	Primary data
(S)	A quantity which can vary from one individual to another is called	(4)	Raw data

A. P-3, Q-1, R-2, S-4

B. P-3, Q-1, R-4, S-2

C. P-1, Q-3, R-2, S-4

D. P-1, Q-3, R-4, S-2

Answer: B

Watch Video Solution

Exercise Assertion And Reason Type

1. Assertion : If the mean of five observations x, x + 2, x + 4, x + 6, x + 8 is 11, then mean of last three observations is 8.

Reason : Mean of n observations is equal to Sum of observations upon Number of observations

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: D

Watch Video Solution

Watch Video Solution

2. Assertion : The range of the first 6 multiples of 6 is 9.

Reason : Range = Maximum value - Minimum value

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not tlie correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: D

Watch Video Solution

3. Assertion : The median of 83, 37, 70, 29, 45, 63, 41, 70, 34, 54, is 49.5.

Reason : The median of n odd number of observations is $\left(\frac{n+1}{2}\right)^{\text{th}}$

term.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not tlie correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: B

Watch Video Solution

4. Assertion : The median of the following observation 0, 1, 2, 3, x, x + 2, 8, 9, 11, 12 arranged in ascending order is 63, then the value of x is 62.

Median of n even observations is

$$\frac{\left(\frac{n}{2}\right)^{\text{th}}\text{term} + \left(\frac{n}{2}+1\right)^{\text{th}}\text{term}}{2}$$

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not tlie correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: A

Watch Video Solution

5. Assertion : The following is the data of wages per day : 8, 4, 7, 5, 8, 8, 5, 7, 9, 5, 7, 9, 10, 8, then the mode of the data is 8.

Reason : Mode = Highest observation - lowest observation.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not tlie correct explanation of assertion.

C. If assertion is true but reason is false.

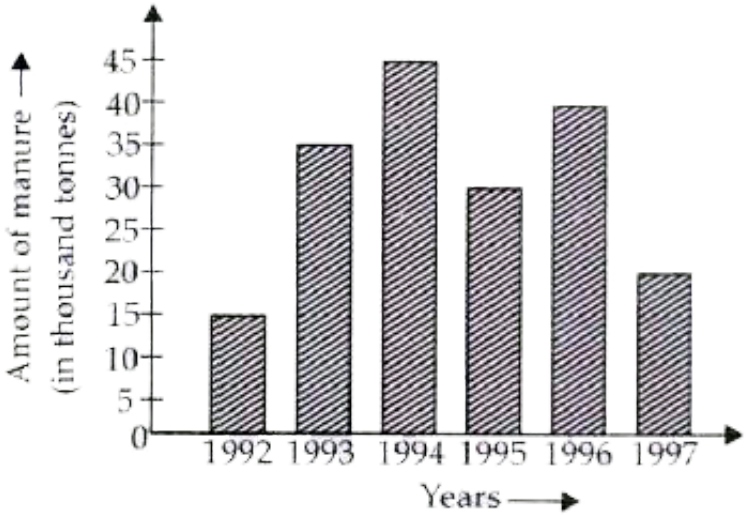
D. If assertion is false but reason is true.

Answer: C

Watch Video Solution

Exercise Comprehension Type

1. The following graph gives the amount of manure (in thousand tonnes) manufactured by a company during some years.



In which year the amount of manure manufactured by the company was maximum?

A. 1993

B. 1994

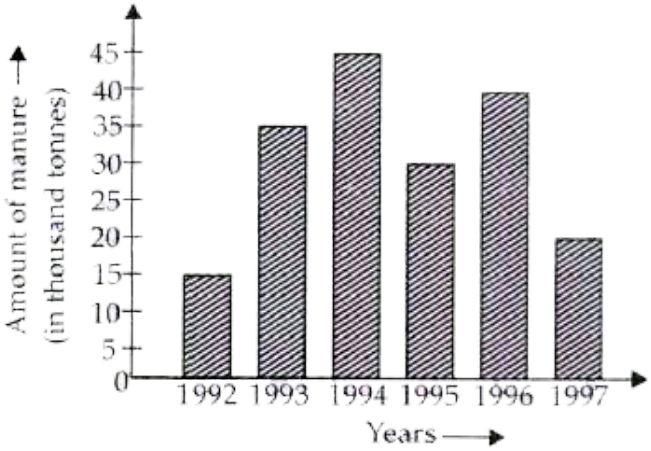
C. 1996

D. 1997

Answer: B

Watch Video Solution

2. The following graph gives the amount of manure (in thousand tonnes) manufactured by a company during some years.



The consecutive years during which there was maximum decrease in manure production are:

A. 1994 and 1995

B. 1992 and 1993

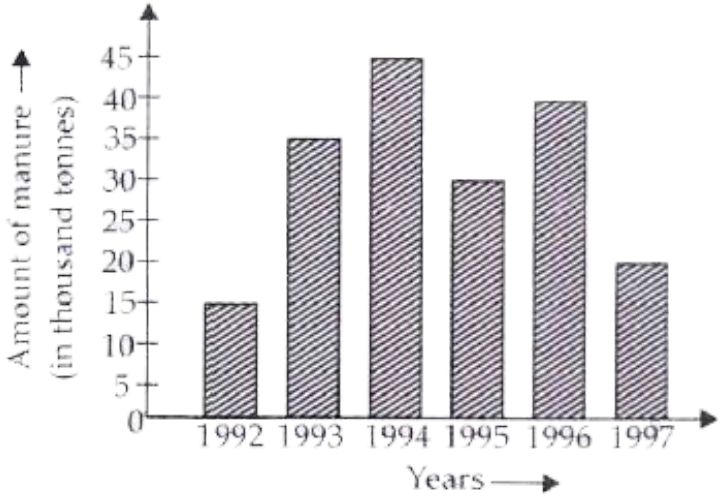
C. 1996 and 1997

D. 1995 and 1996

Answer: C

Watch Video Solution

3. The following graph gives the amount of manure (in thousand tonnes) manufactured by a company during some years.



In which year the amonnt of manure manufactured by the company was minimum?

A. 1992

B. 1993

C. 1995

D. 1997

Answer: A

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4. Durations of sunshine (in hours) in Amritsar for first 10 days of August 1997 as reported by the Meteorological Department are given below. 9.6, 5.2, 3.5, 1.5, 1.6, 2.4, 2.6, 8.4, 10.3, 10.9

Find the mean.

A. 5.4

B. 3.6

C. 5.6

D. 6.5

Answer: C

Watch Video Solution

5. Durations of sunshine (in hours) in Amritsar for first 10 days of August 1997 as reported by the Meteorological Department are given below. 9.6, 5.2, 3.5, 1.5, 1.6, 2.4, 2.6, 8.4, 10.3, 10.9

The value of $\sum_{i=1}^{10}(x_i - \bar{x}) =$

A. 1

B. 0

C. 2

D. -1

Answer: B

Watch Video Solution

6. Durations of sunshine (in hours) in Amritsar for first 10 days of August 1997 as reported by the Meteorological Department are given below. 9.6, 5.2, 3.5, 1.5, 1.6, 2.4, 2.6, 8.4, 10.3, 10.9

Find the range

A. 9.5

B. 8.8

C. 0.1

D. 9.4

Answer: D

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7. A, B, Care three sets of values of x: A: 2, 3, 7, 1, 3, 2, 3,

B: 7, 5, 9, 12, 5, 3, 8,

C: 4, 4, 11, 7, 2, 3, 4

Find the mean of A, B and C respectively.

A. 7,5,3

B. 7,3,5

C. 3,7,5

D. 5,3,7

Answer: C

Watch Video Solution

8. A, B, Care three sets of values of x: A: 2, 3, 7, 1, 3, 2, 3,

B: 7, 5, 9, 12, 5, 3, 8,

C: 4, 4, 11, 7, 2, 3, 4

Find the difference between A's & B's mean

A. 3

B. 4

C. 5

D. 2

Answer: B

Watch Video Solution

9. A, B, Care three sets of values of x: A: 2, 3, 7, 1, 3, 2, 3,

B: 7, 5, 9, 12, 5, 3, 8,

C: 4, 4, 11, 7, 2, 3, 4

The difference between median and mode of C is

A. 1

B. 2

C. 3

D. 0

Answer: D

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Exercise Subjective Problems Very Short Answer Type

1. Define Arithmetic mean.

Watch Video Solution

2. Give the formula of median for odd and even number of terms

Watch Video Solution

3. Define mode, range and mid point.

Watch Video Solution

4. Write the formula for finding mean from grouped frequency distribution.

Watch Video Solution

5. Define bar graph, histogram, frequency polygon

Watch Video Solution

6. The heights (in cm) of 9 students of a class are as follows:

150, 160, 140, 140, 150, 140, 150, 144, 148

Find the median of this data.

Watch Video Solution

7. The following observations have been arranged in ascending order. If the median of the da ta is 54. Find the value of x.

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

Watch Video Solution

8. Find the mean of the given data:

x	2	3	4	5	10
f	3	2	6	7	2

Watch Video Solution

9. Find the mode of following distribution:

3.5, 3.5, 3.1, 3.5, 3.7, 3.8, 3.5, 3.6, 3.7, 3.2

Watch Video Solution

10. Find the mean of 25 numbers if the mean of 15 of them is 18 and the mean of the remaining numbers is 13

Watch Video Solution

Exercise Subjective Problems Short Answer Type

1. The runs scored by players of a cricket team are as follows:

57, 17, 26, 91, 115, 26, 83, 41, 57, 0, 26

Find their mean, median and mode.

Watch Video Solution

2. The marks of students of a class are given in following frequency distribution. Find the mean.

Marks obtained	No. of students
0 - 10	4
10 - 20	28
20 - 30	42
30 - 40	20
40 - 50	6

View Text Solution

3. Arnav scored 63 marks in English, 57 in Hindi, 82 in Mathematics, 55 in Social Science and x in Science. If the average he scored is 60, find the average of best four of them.

Watch Video Solution

4. In a hospital the ages of 360 patients for getting medical treatment on a day are as under:

Age (in years)	Number of patients
10 - 20	90
20 - 30	50
30 - 40	60
40 - 50	80
50 - 60	50
60 - 70	30

Find the mean of given frequency distribution table

View Text Solution

5. Find arithmetic mean from following frequency distribution

Weight (in kg)	40-44	44-48	48-52	52-56	56-60	60-64
Number of Persons	5	6	5	9	3	2

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6. Draw the histogram of distribution

Weight (in kg)	40-44	44-48	48-52	52-56	56-60	60-64
Number of Persons	5	6	5	9	3	2

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7. Mean of 18 numbers is 10. If 2 is multiplied to every number, what will be the new mean?

Watch Video Solution

8. The mean of 20 numbers is 32. If 5 is added to each number, then find the new mean

Watch Video Solution

9. Construct a histogram for the following distribution:

Class-intervals	Frequency
0-5	5
5-10	6
10-15	3
15-20	2

Watch Video Solution

10. Draw a frequency polygon for the following frequency distribution.

Class Interval	1-5	6-10	11-15	16-20	21-25	26-30
Frequency	5	8	4	3	6	9

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Exercise Subjective Problems Long Answer Type

1. Construct the frequency table with equal class intervals for the following data on the monthly wages (in Rs) of 30 workers working in a factory, taking one of the class intervals as 210-230 (230 not included).

220, 215, 306, 280, 210, 254, 306, 302, 319, 300,

311, 272, 210, 258, 220, 256, 306, 316, 240, 278,

292, 318, 304, 320, 290, 242, 268, 242, 268, 316.

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2. 100 surnames were randomly picked up for a test and fequency distribution of the number of letters in the English alphabet in the surnames was found as follows :

Number of letters	Number of surnames
1 - 5	4
5 - 7	25
7 - 9	40
9 - 13	24
13 - 20	6

Draw a histogram to depict the given information

Watch Video Solution

3. 100 surnames were randomly picked up for a test and fequency distribution of the number of letters in the English alphabet in the surnames was found as follows :

Number of letters	Number of surnames
1 - 5	4
5 - 7	25
7 - 9	40
9 - 13	24
13 - 20	6

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

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4. Mean of first 11 multiples of 11 is x and median of that numbers is y. Find x : y.

Watch Video Solution

5. Construct the frequency polygon for the following data:

Age (in years)	0-5	5-10	10-15	15-20	20-25
Frequency	6	8	7	9	4

Watch Video Solution

6. Find the difference between the median and mean of factors of 42.

Watch Video Solution

Exercise Integer Numerical Value Type

1. If the mean of a, b, c, d and e is 28, mean of a, c and e is 24 and mean of b and d is n^2 - 2, then the value of n is ± k, where k is

Watch Video Solution

2. If the arithmetic mean of 7, 5, 13, x, 9 and 10 is 10, then value of x is

Watch Video Solution

3. If the mode of data 3, 4, 3, 5, 4, 6, 6, xis 4, find the value of x.

Watch Video Solution

4. If the mode of scores 36, 48, 36, 60, 48, 72, 72, x 100 surnames we is 48, find the value of x.

Watch Video Solution

5. If the number 13, 15, 17, 18 and n are arranged in ascending order and their arithmetic mean and median are equal then va lue of n will be

Watch Video Solution

6. If the mean of the following distribution is 4, find the value of p.

x	1	2	3	4	5
f	1	4	2	1	$p+5$

Watch Video Solution

7. If the mean of 1002, 1004, 1006, 1008, 1010 is $(n)^3 + 6$, then find the value of n.

Watch Video Solution

8. The median of the following data : 0, 2, 2, 2, -3, 5, - 1, 5, 5, -3, 6, 6, 5, 6 is n x 0.7. Find the value of n.

Watch Video Solution

9. The mean of the numbers 50, 40, 35, x + 10, x + 8, 12, 11, 8, 6 is 30. If median of the data is n^2 - 1, then find the positive value of 3n

Watch Video Solution

10. The mean of 5 numbers is 18. If one number is included, their mean is 16. Find the included number.

Watch Video Solution

Olympiad Hots Corner

1. The weight (in kg) of 50 students are given below

40 45 55 62 50 51 56 69 61 36

60 56 69 38 35 63 57 50 57 48

40 63 53 64 47 42 56 51 42 60

55 39 64 57 64 44 66 35 59 59

73 62 49 63 37 63 54 72 44 60

Find the mean, median and mode respectively for the given data.

A. 55 kg, 57 kg, 64 kg

B. 55 kg, 57 kg, 62 kg

C. 53.9 kg, 56 kg, 63 kg

D. None of these

Answer: C

View Text Solution

2. The mean of a set of seven numbers is 81. If one of the number is discarded, then the mean of the remaining numbers is 78. The value of discarded number is

A. 98

B. 99

C. 100

D. 101

Answer: B

Watch Video Solution

3. The median of first 10 prime numbers will be

A. 5

B. 11

C. 12

D. 13

Answer: C

Watch Video Solution

4. The mean of 25 numbers is 8. If 2 is added to every number, what will be the new mean?

A. 10

B. 6

C. 8

D. 12

Answer: A

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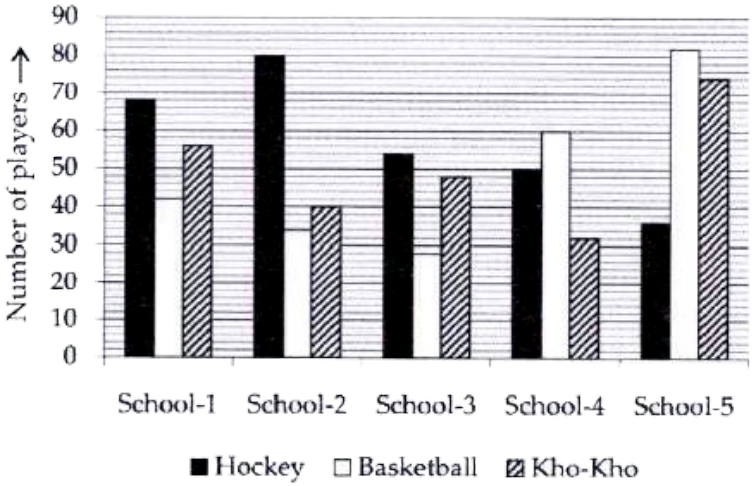
5. Answer the questions on the basis of the information given below: Number of players participating in three different games in five different schools.



Number of p layers participating in Kho-Kho from School-4 is what percent of number of players participating in hockey from School-2?

A. 42

B. 48

C. 36

D. 40

Answer: D

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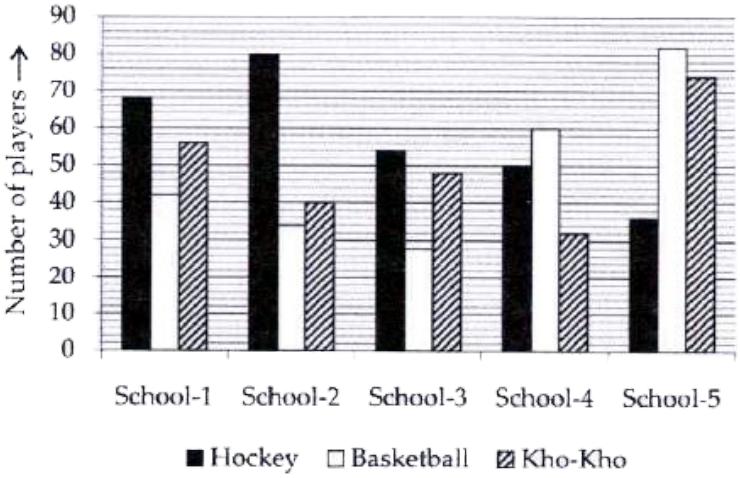
6. Answer the questions on the basis of the information given below:

Number of players participating in three different games in five different schools.



25% of the number of the players participating in hockey from School-5 are females. What is the number of the hockey players who are males in School-5?

A. 15

B. 18

C. 30

D. 27

Answer: D

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7. If the arithmetic mean of the numbers $x_1, x_2, x_3, \ldots\ldots, x_n$ is $\bar{x}$, then the arithmetic mean of the numbers $ax_1 + b, ax_2 + b, ax_3 + b, \ldots\ldots, ax_n + b$, where a and b are two constants, would be:

A. $\bar{x}$

B. $na\bar{x} + nb$

C. $a\bar{x}$

D. $a\bar{x} + b$

Answer: D

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8. If the n observations are 24, 17, 13, 24, 26, 20, 26, 30, 8, 41, 24, then match the following

	Column-I		Column-II
(P)	Mean =	(i)	23.55
(Q)	Mode =	(ii)	23
(R)	If all 24 are replaced by 26, then new mean (approximately) =	(iii)	26
(S)	If all 24 are replaced by 26, then new mode =	(iv)	24

A. P-(i), Q-(ii), R-(iii), S-(iv)

B. P-(iv), Q-(iii), R-(ii), S-(i)

C. P-(ii), Q-(iv), R-(i), S-(iii)

D. P-(i), Q-(ii), R-(iv), S-(iii)

Answer: C

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9. The mean of the following data is 8, then the value of p is

x	3	5	7	9	11	13
y	6	8	15	p	8	4

A. 21

B. 23

C. 24

D. 25

Answer: D

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10. The mean of certain number of observations is 46. If four observations whose mean is 52 are removed, the mean becomes 44.5. The original number of observations is

A. 35

B. 20

C. 15

D. 12

Answer: B

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11. If the number of observations n is even, then median is

A. $\left(\frac{n+1}{2}\right)^{\text{th}}$ term

B. $\left(\frac{n}{2}\right)^{\text{th}}$ term

C. Mean of $\left(\frac{n}{2}\right)^{\text{th}}$ and $\left(\frac{n}{2}+1\right)^{\text{th}}$ term

D. None of these

Answer: C

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12. Mean of 35 observations is 75.The mean of first 18 observations is 70 and the mean of last 18 observations is 80 .Then the 18^{th}observation is

A. 80

B. 70

C. 68

D. 75

Answer: D

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13. The numbers are arranged in the descending order: 108, 94, 88, 82, x + 7, x - 7, 60, 58, 42, 39. If the median is 73, the value of x is

A. 72

B. 73

C. 76

D. 75

Answer: B

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14. The average of 9 numbers is 18. If the average of first five numbers is 19 and the average of last 5 numbers is 17, find the 5th number.

A. 16

B. 20

C. 18

D. 22

Answer: C

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15. When 10 is subtracted from each of the given observations, the mean is reduced by $60\ \%$. If 5 is added to all the given observations, the mean will be:

A. 25

B. 30

C. 32

D. None of these

Answer: D

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16. The median of certain observations 17, 18, 23, 27, x - 3, x + 5, 45, 49, 74 and 84, arranged in ascending order is 35. Later on, it was found that one observation 72 was misread as 27 by mistake. The correct median of the data is

A. 36

B. 38

C. 42

D. 47

Answer: C

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17. The mean of 7 numbers is 10. If the mean of first 4 numbers is 8 and that of last 4 numbers is 16, then the fourth number is:

A. 20

B. 26

C. 30

D. 36

Answer: B

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18. Observations 11, 12, 14, 18, x + 2, x + 4, 30, 32, 35, 41 have been arranged in ascending order. If median is 24, then the value of x will be

A. 22

B. 21

C. 24

D. None of these

Answer: B

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19. (x + 2), x and (x - 1) are the frequencies of the numbers 12, 15 and 20 respectively. If the mean of the distribution is 14.5, the value of x is

A. 2

B. 3

C. 4

D. 5

Answer: B

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20. If the mean of x and $\frac{1}{x}$ is M,the mean of x^3 and $\frac{1}{x^3}$ is

A. $\frac{M^2-3}{2}$

B. $M\left(4M^2-3\right)$

C. M^3

D. M^3+3

Answer: B

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