Very-Very Short Answer Type (1 marks)

1. Facts or figures, collected with a definite purpose are called _____
2. The number of times an observation occurs in the given data is called _____ of that observation.
3. The difference between the highest and lowest values of the data is called _____ of the data
4. For class 5.5 - 15.5, 15.5-25.5, 25.5 - 35.5, Class size is _____
5. Class mark of class 7–12 is _____
6. The mean of 1, 3, 5, 7, 19, 28 is _____
7. The median of first 10 natural numbers is _____
8. The mode of 14, 25, 14, 28, 17, 18, 18, 14, 23, 25, 14, 18 is _____
9. Find the range of the data :
   25, 20, 20, 19, 23, 26, 28, 22, 32, 45
10. Find the class size of the class intervals :
    0-4, 5-9, 10-14, ...
11. The class marks of a continuous distribution are 3.05, 3.15, 3.25, 3.35, 3.45 and 3.55. Find the class interval corresponding to the class mark 3.35.
12. Find the mean of the prime factors of 24.
13. If the mode of the data 13, 27, 24, 13, 17, 16, 17, 21, 22, x, 13, 17 is 17 then find the value of x.
14. Find the mean of first 5 prime numbers.
15. The mean of x_1, x_2, x_3, x_4, x_5 is 10, then what is the mean of $3x_1, 3x_2, 3x_3, 3x_4, 3x_5$?
16. Write the class interval, whose class mark is 8.5 and class size is 5.
17. Write the upper limit of a class interval, whose lower limit is 13 and class mark is 15.
18. If 11 observations are arranged in descending order, which observation will be the median ?
19. In a data, 16 observations are arranged in ascending order. If the 10th observation is increased by 10, what will be the corresponding effect on the median ?
20. Find the median of first 9 whole numbers.
21. When a number a is added to each of the numbers 2, 7, 8, 12, 6, 10 and 11, the mean is 10. Calculate the value of a.
22. In a frequency distribution table, the frequencies of 3, 4 and 5 are 8, 19 and 13 respectively. Find their mean
23. Out of total of 20 observations arranged in ascending order 9th, 10th and 11th observations are 36, 40 and 44 respectively. Find the median.

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24 The mean of first two observations is 6 and the mean of first three observations is 7. Find the third observation.

25. The mean of first three observations is 15 and the mean of next two observations is 20. Find the mean of all five observations.

Case study based - problems (26 to 28)

26. To identify the covid-19 symptomatic person, a health worker performed door to door survey. Record of one family is given below.



S.No.	Name	Gender	Age (in years)	Temperature (°F)	SpO_2 level
1.	Roshan Lal	M	72	98.2	94
2.	Geeta Devi	F	70	98.3	95
3.	Rakesh	M	47	98.6	97
4.	Monika	F	43	98.0	97
5.	Ajay	M	16	98.4	99
6.	Ananya	F	13	98.5	98

(A) The average temperature of the family is :
(a) 98.4° F (b) 98.2°F (c) 98.6° F (d) 98.3° F

(B) The range of the ages is :
(a) 47 years (b) 59 years (c) 43 years (d) 50 years

(C) The mode of SpO2 level is :
(a) 97 (b) 99 (c) 98 (d) 95

(D) The median of the temperature is :
(a) 93.25° F (b) 98.35° F (c) 98.45°F (d) 98.55° F

(E) The difference of average age of males and that of females is :
(a) 3 years (b) 4 years (c) 5 years (d) 6 years

Case Study Based Questions

27. During a Van Mahotsava a week, 50 trees each were planted by 25 schools. After one month, it was found that following number of trees were survived in the schools.

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30	27	26	32	40
32	26	25	30	20
38	30	29	15	21
25	27	21	20	29
42	40	37	16	22

(A) The range of the data is :

(a) 27 (b) 30 (c) 25 (d) 32

(B) The mean of the data is :

(a) 27 (b) 30 (c) 25 (d) 28

(C) The median of the data is :

(a) 27 (b) 30 (c) 25 (d) 28

(D) The mode of the data is :

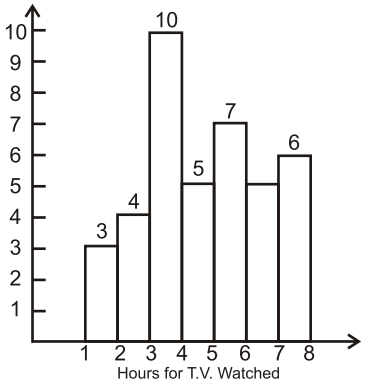
(a) 27 (b) 30 (c) 25 (d) 28

(E) Number of school where number of survived plant is more than their mean is :

(a) 10 (b) 12 (c) 14 (d) 16

28. A teacher keep records of various activities of his students. The record of watching television on a holiday by 40 students is shown by the following graph:





(A) Maximum number of students watched T.V. for :

(a) 3-4 hours (b) 4-5 hours (c) 5-6 hours (d) 6-7hours

(B) Number of students watched T.V for less than 5 hours:

(a) 17 (b) 22 (c) 5 (d) 15

(C) The class-mark of the class 6-7 is :

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(a) 6 (b) 7 (c) 6.5 (d) 1

(D) The class interval whose mark is 5.5 is:

(a) 2-3 (b) 3-4 (c) 4-5 (d) 5-6

(E) Number of students watched T.V. for more than equal to 6 hours is.

(a) 5 (b) 6 (c) 7 (d) 11

Very Short Answer Type (2 marks)

29. The mean of five numbers is 27. If one of the number is excluded, the mean gets reduced by 2. What is the value of the excluded number ?

30. Find the mode of the data 15, 14, 19, 20, 14, 15, 16, 14, 15, 18, 14, 19, 15, 17, 15, If last observation is changed to 14then find the new mode.

31. The mean monthly salary of 40 workers of a factory is ₹ x in a particular year. Each one was given ₹ 3000 as Diwali Bonus. What will be the mean monthly salary in that month.

32. The median of following observations arranged in ascending order 14, 18 $x + 2$, $x + 4$, 30, 34 is 24. Find the value of x and hence find mean of the data.

33. For what value of x the mode of the following data : 13, 24, 13, 27, 17, 16, 17, x, 22, 21, 13, 17 is 17 ?

34. The average age of Shikha and her husband Amit is 48 years. The average age of Shikha, Amit and their daughter Advika is 39 years. Find the age of Advika.

35. The mean of 6, 10, 11, x, 12, y is 10. Also Y is 7 more than X. Find the value of x and y.

36. The weight (in kg) of 25 students are given below 35, 38, 36, 37, 38, 35, 37, 36, 35, 38, 36, 36, 35, 35, 38, 37, 35, 36, 38, 38, 35, 35, 36, 38, 37

Complete the following frequency table :

Weights	35	36	37	38
Frequences	____	____	____	____

37. The class marks of a distribution are 104, 114, 124, 134. Determine the class size and the class limits.

38. If the mean of the observations x, $2x + 1$, $2x + 5$, $2x + 9$ is 30. What is the mean of last two observations :

39. Find the mean of the ages (in year) of 25 people.

Age (In years)	25	26	27	28	29
No. of people	4	7	6	3	5

40. Following data gives the number of children in 30 families:

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

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Represent it in the form of a frequency distribution.

41. The following are the runs made by 18 players in one day cricket match:
3, 7, 16, 27, 46, 122, 73, 24, 7, 3, 0, 8, 46, 3, 99, 45, 28, 79
Form a frequency table for above data with equal class intervals one of these being 0-25 (excluding 25)

42. Find the mean of all the prime numbers lying between 11 and 41.

43. The mean of 15 observations is 18. If one number is included, the mean becomes 19. Find the included number.

44. In three unit tests of Mathematics Priyal got 75, 82 and 90 marks. How many marks must she obtain in Unit Test IV to have an average of 85 in all the four unit tests ?

45. Time taken in seconds by 25 students in an examination to solve certain question is given below.
20, 16, 20, 27, 27, 28, 30, 33, 37, 50, 40, 42, 46, 28, 43, 46, 46, 48, 49, 52, 58, 59, 60, 64, 52.
By, taking class interval of size 10, make a frequency distribution table.

46. Find the mean from the following table

xi	5	15	25	35	45
fi	6	4	9	6	5

47. Draw the histogram from the following data

Class	0-10	10-20	20-30	30-40	40-50
Frequency	8	15	20	12	16

48. Given below is a cumulative frequency distribution table showing the marks scored by 50 students of a class.

Marks	Number of students
Below 20	17
Below 40	22
Below 60	29
Below 80	37
Below 100	50

Form a frequency table from the above data.

49. Given below are the seats won by different political parties in a state assembly election.

Political Party	A	B	C	D	E	F	G
Seat Won	75	55	37	29	10	37	50

Draw a bar graph for above data.

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50. Find the value of 'p' from the following distribution if the mean is 6.

xi	2	4	6	10	p+5
fi	3	3	3	1	2

51. Given below is the data of students who participated in different activities.

Activity	Sports	Meditation	Yoga	Walking
No. of Girls	42	35	100	120
No. of Boys	90	64	130	86

Draw double bar graph.

52. Draw histogram to represent the data given below.

Age (in years)	No of children
1 - 2	5
2 - 3	4
3 - 5	10
5 - 7	12
7 - 10	9
10 - 15	10
15 - 17	8

53. The mean marks of boys & girls in periodical test are 36 and 39 respectively. If the mean marks of all the students of class IX in that test are 37. Find the ratio of the number of boys to the number of girls.

Section-IV

54. In a mathematics best given to 15 students, the following marks (out of 80) are recorded : 49, 24, 51, 57, 43, 49, 71, 77, 49, 46, 43, 51, 20, 51, 57.
Find the mean, median and mode of the data.

55. The median of the following observations, arranged in ascending order is 25, find x, Also find the mean
11, 13, 15, 19, x+2, x+4, 30, 35, 39, 46

56. Construct a histogram from the following distribution of total marks obtained by 40 students of IX class in a test:

Class Marks (Mid Points)	5	15	25	35	45	55
No. of Students	3	7	6	14	8	2

57. For the following data, draw a frequency polygon:

Marks obtained	10-20	20-30	30-40	40-50	50-60
No. of Students	6	8	3	9	4

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58. The mean of the following data is 15, find F.

x_i	5	10	15	20	25
f_i	6	F	6	10	5

Long Answer Type (5 Marks)

59. The mean of the following data is 50.

xi	10	30	50	70	90
fi	17	5a+3	32	7a-11	19

60. Draw a frequency polygon for the following data

Marks	Frequency
0 - 10	03
10 - 20	09
20 - 30	18
30 - 40	16
40 - 50	12
50 - 60	02

61. If the 26 English alphabets are taken such that A=1, B=2, C=3, ... Z=26 then find

(I) The mean and median of the numbers corresponding to the vowels.

(ii) Which vowel corresponds to the median ?

62. In a school a student who scored 80% or above in his/her previous class is eligible for "Merit scholarship". Marks obtained by two students Nishi and Vinayak of class IX in their previous class (VIII) in all subjects are given below.

Name	Hindi	English	Maths	Science	SSt.	Skt.
Nishi	78	74	86	85	73	83
Vinayak	79	76	88	83	71	85

Find average percentage score of Nishi and Vinayak. Which of the two are eligible for merit scholarship ?

63. The blood group of 30 students of class IX are recorded as follows.

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

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

a) Make a frequency distribution table for the above data.

b) Mr. 'X' meets an accident and needs blood, His blood group is AB. How many of these students are universal donors and how many are universal receipient ?

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64. 15 students of Govt. school spend the following numbers of hours in a month for cleanliness of their street

25, 15, 20, 20, 9, 20, 25, 15, 7, 13, 20, 12, 10, 15, 8

Find mean, median and mode of the above data.

65. A doctor suggests two ways for treatment of a particular disease one by taking medicine only and other by doing meditation and yoga.

Age group	No. of patients taking medicines	No. of patients doing meditation & yoga
20-30	20	05
30-40	30	12
40-50	42	20
50-60	40	30
60-70	30	20

i) Draw Frequency polygons for the above data on the graph.

Represent the data of both the ways of treatment on the same graph by two frequency polygons.

66. The following table shows number of voluntary blood donors per day in voluntary blood donation camp organized in Delhi.

Days	No. of Donars
Sunday	100
Monday	80
Tuesday	110
Wednesday	80
Thursday	60
Friday	70
Saturday	120

i) Draw a bar graph showing above information.

ii) On which day donation was maximum and on which day it was minimum ?

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STATISTICS

Answers

1. data
2. frequency
3. Class Size
4. 10
5. 9.5
6. 10.5
7. 5.5
8. 14
9. 26
10. 4
11. 3-30-3.40
12. 2.5
13. x = 17
14. 5.6
15. 30
16. 6-11
17. 17
18. 6th
19. No change
20. 4
21. 2
22. $\bar{x} = \frac{3 \times 8 + 4 \times 19 + 5 \times 13}{8 + 19 + 13}$
    $= \frac{165}{40}$
    = 4.125
23. Median $= \frac{40+44}{2}$
    = 42
24. $x_1 + x_2 = 12$
    $x_1 + x_2 + x_3 = 21$
    $x_3 = 9$
25. Mean = 17
26. (A) (d) 98.3°F
    (B) (b) 59 years
    (C) (a) 97
    (D) (b) 98.35°F
    (E) (a) 3 years
27. (A) (a) 27
    (B) (d) 28
    (C) (a) 27
    (D) (b) 30
    (E) (b) 12
28. (A) (a) 3-4 hours
    (B) (b) 22
    (C) (c) 6.5
    (D) (d) 5-6
    (E) (d) 11
29. 35
30. Mode = 15
    New Mode = 14
31. ₹ (x + 3000)
32. $\frac{x+2+x+4}{2} = 24$
    $x = 21$
    Mean $= \frac{144}{6}$
    = 24
33. $x = 17$
34. Shikha + her husband = 96 years
    Shika + her husband + daughter = 117 years
    Daughter = 21 years
35. $\frac{39+x+x+7}{6} = 10$
    $2x = 14 \Rightarrow x = 7$
    $y = 14$
36.

Weights	35	36	37	38
Frequencies	8	6	4	7

37. Class Size = 10

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Class limits :

99 – 109, 109 – 119, 119 – 129, 129 – 139

38. $\bar{x} = \frac{7x+15}{4}$

$x = 15$

Mean $= \frac{35+39}{2}$

$= 37$

39.

Age in yrs xi :	25	26	27	28	29
No. of people fi :	4	7	6	3	5
$x1fi$	100	182	162	84	145

$x = \frac{\varepsilon fixi}{\varepsilon fi}$

$= \frac{673}{25} = 26.92$

40.

No. of Children	Tally Marks	No. of Families
0	𝍸	5
1	𝍸 II	7
2	𝍸 III	8
3	IIII	4
4	IIII	4
5	II	2

41.

Class-Internal	Tally Marks	Frequency
0-25	𝍸 IIII	9
25-50	𝍸	5
50-75	I	1
75-100	II	2
100-125	I	1

42. Mean $= \frac{169}{7}$

$= 2 \quad 4.14$

43. $\frac{270+x}{16} = 19$

$x = 34$

Included number = 34

44. $247 + x = 340$

$x = 93$

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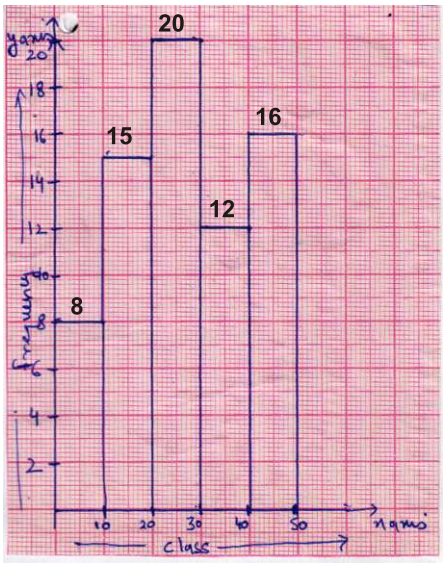
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45.

Class-Internal	Tally Marks	Frequency
15-25	III	3
25-35	𝍸 I	6
35-45	IIII	4
45-55	𝍸 III	8
55-65	IIII	4

46. x = 25

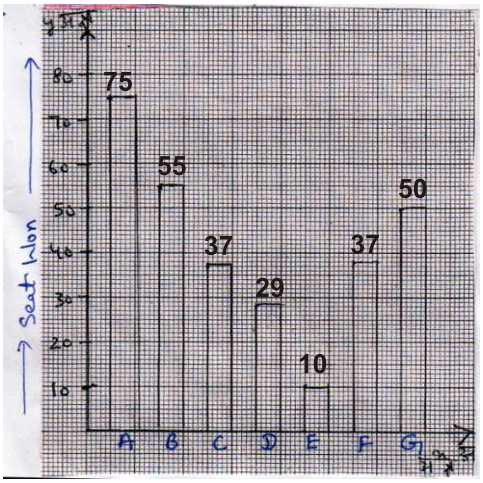
47.



48.

Class-Internal	Frequency
0-20	17
20-40	5
40-60	7
60-80	8
80-100	13

49.



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50.

x	f	fx
2	3	6
4	3	12
6	3	18
10	1	10
p+5	2	10+2P
	12	56+2P

$6 = \frac{56+2P}{12}$

$2p = 16$

$p = 8$

53. 2:1

54. Mean $= \frac{738}{15}$

$= 49.2$

Median = 49

Mode = 49, 51

55. Median $= \frac{x+2+x+4}{2}$

$2x = 44$

$x = 22$

Mean $= \frac{258}{10}$

$= 25.8$

58.

xi	fi	xifi
5	6	30
10	F	10F
15	6	90
20	10	200
25	5	125
	27+f	445+10f

$15 = \frac{445+10f}{27+f}$

$F = 8$

59.

xi	fi	fixi
10	17	170
30	5a+3	90+150a
50	32	1600
70	7a-11	-770+490a
90	19	1710
	12a+60	2800 + 640a

$x = \frac{2800+640a}{12a+60}$

$600a + 3000 = 2800 + 640a$

$200 = 40a$

$a = 5$

61.

A	E	1	0	U
1	5	9	15	21

Mean $= \frac{51}{5}$

$= 10.2$

Median = 9

(ii) I

62. Nishi's Avg.% score $= \frac{479}{6}$

$= 79.83$

Vinayak's Avg.% score $= \frac{482}{6}$

$= 80.33$

Vinayak is eligible

64. Mean $= \frac{234}{15}$

$= 15.6$

Median = 15

Mode = 20

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PRACTICE TEST

Time : 1 hr. **Statistics** M.M. 25

1. Write class limits of the following class marks :
   47, 52, 57, 62, 67, 72, 77 1
2. Find the value of 'x' if mode of the following data is 5. Find x. 1
   2, 4, 3, 5, 4, 5, 6, 4, x, 7, 5
3. Class-mark of class interval 8-15 is _____. 1
4. The median of the following observations arranged in ascending order is 25. Find x. 2
   11, 13, 15, 19, x+2, x+4, 30, 35, 39, 46
5. Find the median of the first 10 natural numbers. Is it equal to their mean ? 2
6. In the mean of x, x+3, x+6, x+9 and x+12 is 10. Find x. 2
7. The mean of 40 observations was 160. It was detected on rechecking that the value of 165 was wrongly copied as 125 for computation of mean. Find the correct mean. 3
8. A die is thrown 1000 times with the following frequencies for the outcomes 1, 2, 3, 4, 5 and 6 as given below. Draw the bar graph of the following data. 3

Outcomes	1	2	3	4	5	6
Frequency	175	125	250	150	100	200

9. If the mean of the following data of 20.2. Find the value of a. 5

x	10	15	20	25	30
f	6	8	a	10	6

10. Draw Histogram and Frequency polygon :- 5

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students	5	10	4	6	7	3	2

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