



## MATHS

## **BOOKS - MBD**

## **STATISTICS**

Example

1. Give some examples of data that you can collect from your day to day

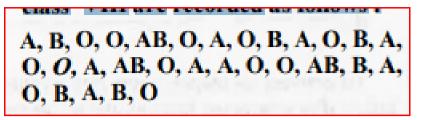
life.

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2. Classify the data in Above as primary and secondary data.

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3. The blood groups of 30 students of a class VIII are recorded as follows :



Represent

this data in the form of a frequency distribution table. Which is themost

common and which is the rarest blood group among these students ?

4. Distance (in km) of 40 engineers from their place of residence to their

place of work were found as follows

01 11	OLD IN	are rou	IIG ao	Rounor		
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 n

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 ?



5. The relative humidity (in %) of a certain city for a month of 30 days was

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

as follows :

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

88 etc.



6. 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

Which

month or season do you think this data is about ?

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7. The relative humidity (in %) of a certain city for a month of 30 days was

as follows :

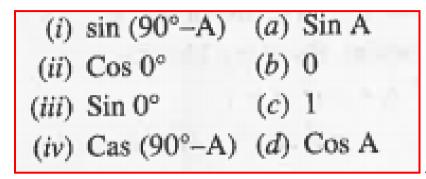
98.1	98.6	99.2	90.3	86.5
95.3	92.9	96.3	94.2	95.1
89.2	92.3	97.1	93.5	92.7
95.1	97.2	93.3	95.2	97.3
96.2	92.1	84.9	90.2	95.7
98.3	97.3	96.1	92.1	89

: What is the

range of this data ?



8. Match the following :



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9. 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					n ek		: What can

you conclude about their heights from the table ?

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**10.** 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

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



**11.** 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	For ł

For how many

days, was the concentra-tion of sulphur dioxide more than 0.11 parts per million.

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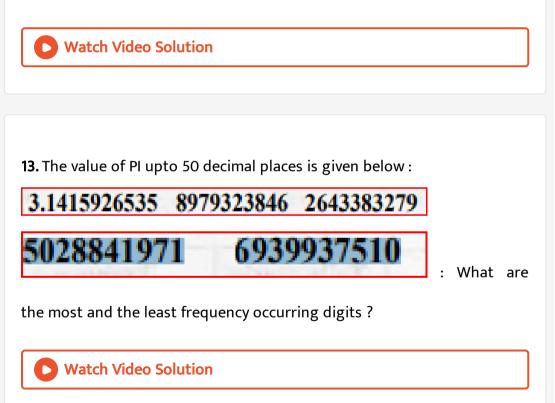
12. Three coins were tossed 30 times simultaneously. Each time thenumber

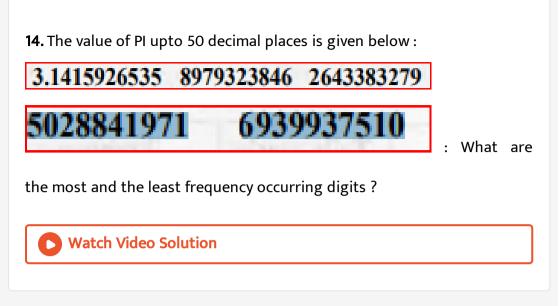
of heads occurring was noted down asfollows :



Prepare a

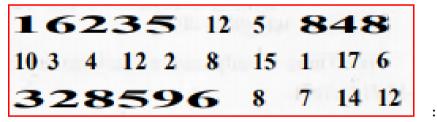
frequency distribution for the data given above





15. Thirty children were asked about the number of hours they watched

TV programmes in the previous week. The results were found as follows :



Make a

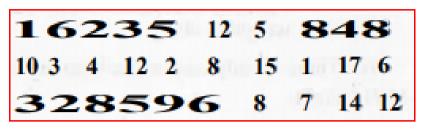
frequency distribution table for this data, taking class width 5 and one of

the class interval as 5— 10



16. Thirty children were asked about the number of hours they watched

TV programmes in the previous week. The results were found as follows :



: How many

children watched television for 15 or more hours a week?



17. A company manufactures carbatteries of 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.

**18.** 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%)

` (##MBD\_MAT\_XI\_C14\_S04\_001\_Q01.png" width="80%"> Represent the information given above graphically :

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**19.** 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%)

	Causes F	emale Mortality
	and the state of the state	rate (%)
1	. Sexual & Reprodu-	31.8
	ctive health conditions	San and stand
2	Neuropsychiatric	25.4
	conditions	
3	. Injuries	12.4
4	. Cardio vascular	4.3
	condition	
5	Respiratory condition	s 4.1
6	Other causes	22.0

Which

:

condition is the major cause of women'sill health and death worldwide ?

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20. 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
on the origination (can be	per thousand boys
Scheduled Caste	940
Scheduled Tribes	970
Non SC/ST	920
Backward districts	950
Non-backward district	ts 920
Rural	930
Urban .	910

Represent

the information above by a bar graph

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**21.** 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	
or jo and matter fam.	per thousand boys	
Scheduled Caste	940	
Scheduled Tribes	970	
Non SC/ST	920	
Backward districts	950	
Non-backward district	ts 920	
Rural	930	
Urban .	910	

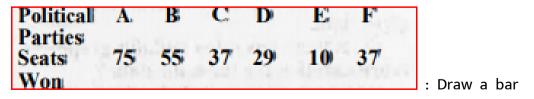
Represent

the information above by a bar graph

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22. Given below are the seats won by different political parties in the

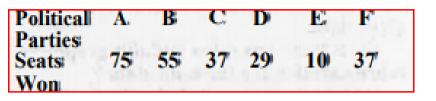
polling outcome of a state assembly elections :



graph to represent the polling results.

23. Given below are the seats won by different political parties in the

polling outcome of a state assembly elections :



Which

•

political party won the maximum number of seats.



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

ength in mm	Number of leaves
118-126	3
127-135	5
136-144	9
145-153	12
154-162	5
163-171	nn chilte 4 numer
172-180	2

histogram to represent the given data.



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

ength in mm	Number of leaves
118-126	3
127-135	5
136-144	9
145-153	12
154-162	5
163-171	nn ceilte 4 mille
172-180	2

other suitable graphical representation for the same data ?



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

ength 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

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

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

Lifetime (in hrs)	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.



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

Lifetime (in hrs)	Number of lamps	
300-400	14	
400-500	56	
500-600	60	
600-700	86	
700-800	74	
800-900	62	
900-1000	48	

lamps have a life time of more than 700 hours ?



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

Sect	tion A	Section	B
Marks	Frequency	Marks	Frequency
(1-10	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	-mic 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 twosections.

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**30.** The runs scored by two teams A and B in 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
43ÿ48	10	4
49-54	6	8
55-60	2	10

Represent

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

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**31.** 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 alphabets	Number of people
1-4	6
4-6	30
6-8	44
8-12	16
12-20	4

а

histogram to depict the given information.



32. 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 alphabets	Number of people
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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<b>33.</b> If $\bar{x}$ is the mean of x1, x2,x2,x3,xn , then the mean of x1+a,x2+a,
x3+axn+a
<b>Watch Video Solution</b>

**34.** If the mean of 8 observations be 15 and 2 be added to each observation, then the mean of new set of observations will be .

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**35.** 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 mean, median and mode of these scores :

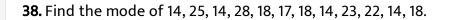


**36.** In a mathematics test given to 15 students, the following marks (out of 100) are recorded : 41, 39, 48, 52, 46, 62, 54, 40, 96, 52, 98, 40, 42, 52, 60 Find the mean, median and mode of this data.

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**37.** The following observations have been arranged in theascending order. If themedian 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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**39.** Find the mode of the following data in each case : 7, 9, 12, 13, 7, 12, 15, 7,

12, 7, 25, 18,7

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

Salary (in ?)	Number of employees
3000	16
4000	12
5000	10
6000	8
7000	6
8000	m4bara year
9001)	3
10000	Log and a set
Total	60

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**41.** Give an example of a situation in which : the mean is an appropriate measure of central tendency.



**42.** 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.

Exercise

**1.** The weights (in kg) of 30 students of a class are 49, 48, 46, 48, 48, 50, 52, 53, 54, 43, 43, 41, 43, 55, 56, 48, 47, 41, 40, 49, 51, 51, 56, 46, 45, 44, 49, 53, 42 and 47. Prepare a frequency table for the above data and answer the following questions : What is the least weight ?



**2.** The weights (in kg) of 30 students of a class are 49, 48, 46, 48, 48, 50, 52, 53, 54, 43, 43, 41, 43, 55, 56, 48, 47, 41, 40, 49, 51, 51, 56, 46, 45, 44, 49, 53, 42 and 47. Prepare a frequency table for the above data and answer the following questions : Find the number of students having the least weight in the above data.



**3.** The weights (in kg) of 30 students of a class are 49, 48, 46, 48, 48, 50, 52, 53, 54, 43, 43, 41, 43, 55, 56, 48, 47, 41, 40, 49, 51, 51, 56, 46, 45, 44, 49, 53, 42 and 47. Prepare a frequency table for the above data and answer the following questions : Find the number of students having the maximum weight in the above data.



**4.** The weights (in kg) of 30 students of a class are 49, 48, 46, 48, 48, 50, 52, 53, 54, 43, 43, 41, 43, 55, 56, 48, 47, 41, 40, 49, 51, 51, 56, 46, 45, 44, 49, 53, 42 and 47. Prepare a frequency table for the above data and answer the following questions : Which weight is possessed by the maximum number of students ?

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**5.** Construct a grouped frequency table with class intervals 0-5, 5 -10 and so on for the following marks obtained in Biology (out of 50) by a group of 35 students in an examination : 0, 5, 6, 7, 10, 12, 14, 15, 20, 22, 25, 26, 27, 8, 11, 17, 3, 6, 9, 17, 19, 21, 22, 29, 31, 35,37, 40, 42, 45, 49, 4, 50, 16 and 20.: What is the range of the data ?

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**6.** Construct a grouped frequency table with class intervals 0-5, 5 -10 and so on for the following marks obtained in Biology (out of 50) by a group of 35 students in an examination : 0, 5, 6, 7, 10, 12, 14, 15, 20, 22, 25, 26, 27, 8, 11, 17, 3, 6, 9, 17, 19, 21, 22, 29, 31, 35,37, 40, 42, 45, 49, 4, 50, 16 and 20.: Which group contains the maximum number of students ?

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7. Pulse rate (per miute) of 30 persons were recorded as

61,76,72,73,71,66,78,73,68,81,78,63,72,75,80,68,75,62,71,81,73,60,79,72,73,74,71,64,76

and71.

Construct a frequency table using class-invervals of equal width, one class

interval being (60-65).

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8. Pulse rate (per miute) of 30 persons were recorded as

61,76,72,73,71,66,78,73,68,81,78,63,72,75,80,68,75,62,71,81,73,60,79,72,73,74,71,64,76

and71.

Construct a frequency table using class-invervals of equal width, one class

interval being (60-65).

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9. Pulse rate (per miute) of 30 persons were recorded as

61,76,72,73,71,66,78,73,68,81,78,63,72,75,80,68,75,62,71,81,73,60,79,72,73,74,71,64,76

and71.

Construct a frequency table using class-invervals of equal width,one class interval being (60-65).

10. Pulse rate (per miute) of 30 persons were recorded as

61,76,72,73,71,66,78,73,68,81,78,63,72,75,80,68,75,62,71,81,73,60,79,72,73,74,71,64,76

and71.

Construct a frequency table using class-invervals of equal width, one class

interval being (60-65).

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11. A family with monthly income of Rs. 20,000 had planned the following

expenditures under various heads :

Serial Number	Head	Expenditure (in Rs. 1000)	
1.	Grocery	- 4	
2.	Rent	5	
3.	Education of children	5	
4.	Medicine	2	
5.	Fuel for vehicle	2	
6.	Entertainment	1	
7.	Miscellaneous	1	

graph for the above data.

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12. Consider the following frequency distribution table representing the

weights of 40 students of a class .

Weights (kg)	Number of students
30.5-35.5	9
35.5910.5	6
40.5-45.55	15
45.5-50.55	3
50.5-55.5	1

Weights (kg)	Number of students
55.5-60.55	2
60.5-65.55	2
65.5-70.55	1
70.5-75.55	1
Total	40

Draw a

histogram to represent the above data.

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**13.** The following distribution gives the time taken by 25 students to solve a problem.

Time (in seconds)	15-20	20-25	25-30	30-35	35-40	40-45	45-50
Number of students	2	3	7	6	4	2	1

Draw a

histogram to represent the above Data.

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14. The following table presents the number of literate females in the age

group (10-34) in town.

Age Group	No. of Females (to the nearest ten)
10-14	300
15-19	980
20-24	800
25-29	- 580
30-34	290
Total	2950

Draw a

histogram to represent the above data



 Marks
 Number of Students

 0-10
 5

 10-20
 10

 20-30
 8

 30-40
 5

 40-50
 2

 Total
 30

15. For the following data, draw a frequency polygon

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**16.** In a city, the following weekly observations were made in a study on cost of living index :

Cost of Living Index	Number of Weeks		
140-150	5		
150-160	10		
160-170	20		
170-180	9		
180-190	6		
190-200	2		
Total	52		

Draw a

histogram and frequency polygon for the above data on the same graph.

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17. The following table gives the distribution of IQ (intelligence Quotient)

IQ	60-90	90-100	100-120	120-130	130-160	160-180	180-200
Number		1.6	-			SICT.	
of Pupils	12	7	10	3	15	-4	2

of 60 pupils of class IX in a school

Draw a

histrogram to represent the above data.

**18.** A teacher wanted to analyse the performance of two sections of students in a Mathematics test. She grouped the students into the categories obtaining marks between 0 - 35, 35 - 50, 50 - 60, 60 - 75, 75 and

above	and	formed	the	following	table	:
1	Marks	Num	ber of S	tudents		
	0-35	-	17			
	35-50		30	1 2.1		
	50-60		. 20	120		
	60-75	1	15	19		
	75-above		8	100		
	2		90			
			_		Prepare	а

histogram to respresent the above data.



**19.** The mean of 96, 98, x, 102, 104 is 100, find x.

Watch Video Solution 20. Find the mean of all possible factors of 20. Watch Video Solution 21. Find the mean of 25, 27, 19, 29, 21, 23, 25, 30, 28, 20 and prove that the sum of the deviation taken from the mean is zero.

**22.** Let m be the mid-point and I be the upper class limit of a class in a continuous frequency ditribution. The lower class limit of the class is :

B. 2m -l

C. m-l

D. m - 2l

### Answer:

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23. The class marks of a frequency distribution are given as follows : 15,

20, 25, The class corresponding to the class mark 20 is :

A. 12.5 -17.5

B. 17.5-22.5

C. 18.5-21.5

D. 19.5-20.5.

## Answer:

24. In the class intervals 10-20, 20-30, the number 20 is included in.

A. 10-20

B. 20-30

C. both the intervals

D. none of these

#### Answer:



**25.** A grouped frequency table with class intervals of equal sizes using 250 -270 (270 not included in this interval) as one of the class interval is constructed observations for the following data : 268, 220, 368, 258, 242, 310, 272, 342, 310, 290, 300, 320, 319, 304, 402, 318, 406, 292, 354, 278, 210, 240, 330, 316, 406, 215, 258, 236. The frequency of the class 310 - 330 is :

A. 4	
B. 5	
C. 6	
D. 7	



**26.** A grouped frequency distribution table with classes of equal sizes using 63 - 72 (72 included) as one of the class is constructed for the following data : 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. The number of classes in the distribution will be :

A. 9

B. 10

C. 11



27. To draw a histogram to represent the following frequency ditribution :

<b>Class</b> interval	5-10	10-15	15 - 25	25 - 45	45 - 75	
Frequency	6	12	10	8	15	the adjusted

frequency for the class 25 - 45 is :

A. 6

B. 5

C. 3

D. 2

## Answer:

28. The mean of five numbers is 30. If one number is excluded, their mean

becomes 28. The excluded number is :

A. 28 B. 30 C. 35

D. 38

## Answer:

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**29.** If the mean of the observations : x, x + 3, x + 5, x + 7, x + 10 is 9, the

mean of the last three observations is

A. 10.33333333333333

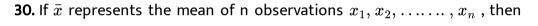
B. 10

C. 11 1/3

D. 11 2/3

## Answer:





value of 
$$\sum_{i=1}^n \left(x_1 - ar{x}
ight)$$
 is :  
A. -1

B. 0

C. 1

D. n-1

## Answer:

31. If each observation of the data is increased by 5, then their mean

A. remains the same

B. becomes 5 times the original mean

C. is decreased by 5

D. is increased by 5.

#### Answer:

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**32.** Let  $\bar{x}$  be the mean of  $x_1, x_2, \ldots, x_n$  and  $\bar{y}$  the mean of  $y_1, y_2, \ldots, y_n \bar{z}$  is the mean of  $x_1, x_2, \ldots, x_n, y_1, y_2$  is equal to :

A.  $ar{x}+ar{y}$ B.  $\displaystyle rac{ar{x}+ar{y}}{2}$ C.  $\displaystyle \displaystyle rac{ar{x}+ar{y}}{n}$ 

D. `(barx+bary)/2n)



**33.** If 
$$\bar{x}$$
 is the mean of x1,x2,x3, .....xn, then for  $a \neq 0$ , the mean of  $ax_1, ax_2, \ldots, ax_n, \frac{x_2}{a}, \frac{x_2}{a}, \ldots, \frac{x_n}{a}$  is:  
A.  $\left(a + \frac{1}{a}\right)\bar{x}$   
B.  $\left(a + \frac{1}{a}\right)\frac{\bar{x}}{2}$   
C.  $\left(a + \frac{1}{a}\right)\frac{\bar{x}}{n}$ 

#### Answer:



D.  $\frac{\left(a+rac{1}{a}
ight)ar{x}}{2n}$ 

**34.** If  $\bar{x}_1, \bar{x}_2, \bar{x}_3, \ldots, \bar{x}_n$  are the means of n groups with  $n_1, n_2, \ldots, n_i$ 

numbers of observation respectively , then the mean  $ar{x}$  of all the group

taken together is given by

A. 
$$\sum_{i=1}^{n} n_i \bar{x}_i$$
  
B.  $\frac{\sum_{i=1}^{n} n_i \bar{x}_i}{n^2}$   
C.  $\frac{\sum_{i=1}^{n} n_i \bar{x}_i}{\sum_{i=1}^{n} n_i}$   
D.  $\frac{\sum_{i=1}^{n} n_i \bar{x}_i}{2n}$ 

#### Answer:

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35. 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. 50.5

B. 51

C. 51.5

D. 52

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**36.** There are 50 numbers. Each number is subtracted from 53 and the mean of the numbers so obtained is found to be -3.5. The mean of the given number is:

A. 46.5

B. 49.5

C. 53.5

D. 56.5

#### Answer:

**37.** The mean of 25 observations is 36. Out of these observations if the mean of first 13 observations is 32 and that of the last 13 observations is 40, the 13th observation is :

A. 23 B. 36 C. 38 D. 40

# Answer:

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**38.** The median of the data 78, 56, 22, 34, 45, 54, 39, 68, 54, 84 is

A. 45

B. 49.5

C. 54



**39.** For drawing a frequency polygon of a continuous frequency distribution, we plot the points whose ordinates are the frequency of the respective classes and abcissae are respectively :

A. upper limits of the clases

B. lower limits of the classes

C. class marks of the classes

D. upper limits of perceeding classes.

# Answer:

**40.** Median of the following numbers : 4, 4, 5, 7, 6, 7, 7, 12, 3 is

A. 4 B. 5 C. 6

D. 7

### Answer:

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**41.** Mode of the data 15, 14, 19, 20, 14, 15, 1 6, 14, 15, 18, 14, 19, 15, 17, 15 is

A. 14

B. 15

C. 16

D. 17

