THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

Part A: Statistics for Economics

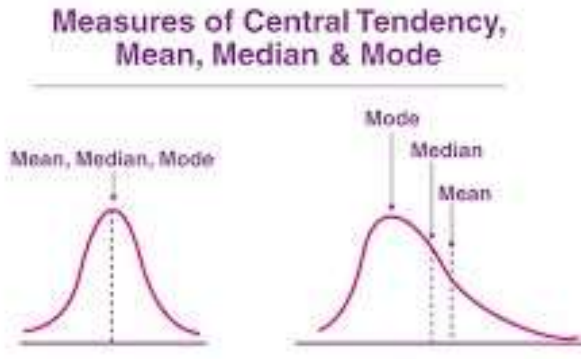
Chapter 5: Measures of Central Tendency

Q. NO	QUESTION	MARKS
1	Average weight of eight students of class XI in a school is 40 kg, two more students whose weights are 44 kg and 36 kg respectively took admission in class XI in the school. What is average weight of the students of class XI now?	1
2	Which of the following is not a characteristic of the mean? a) It is affected by extreme scores. b)It is best used with ordinal data. c) It minimizes the sum of squared deviations. d) The sum of the deviations about the mean is 0.	1
3	Marks scored by the students of class XI Arts having 05 students in a school are 55,68,47,62 and 78 respectively. However, marks scored by the students of class XI Commerce having 07 students of XI Commerce in the same school are 46,28,86,74,41,94and 81 respectively. Which class performed better?	1
4	Read the following statements carefully -Assertion (A) & Reason (R) and choose the correct alternative. **Assertion (A):** The sum of squares of the deviations of the items from their Arithmetic Mean is minimum. **Reason (R):** of all the averages, arithmetic mean is least affected by fluctuations of sampling. **Alternatives:** a)Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation for Assertion (A). b)Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation for Assertion (A. c) Assertion (A) is true but Reason (R) is false. d) Assertion (A) is false but Reason (R) is true.	1
5	Height of seven students is measured in cm as, 140, 142, 144, 145, 147, 149, 151 Find the median height.	1
6	To find the mean, it is necessary to calculate the data in: a) Descending order b)Ascending order c) Ascending or descending order d) Any Random order	1
7	If mean of a series is 32 and median is 40, what would be the value of mode?	1
8	A shoe making company wants to make shoes only for adults and wants to know the most running size. Which of the following measure of central tendency would be best suited for the company: a) Mean b) Mode c) Median d) None of these.	1
9	To calculate_____, it is essential to make class-intervals equals and frequencies have to be adjusted.	1

10	Read the following statements carefully and choose the correct alternative from the following; **Statement1**: Median of a frequency distribution can be located graphically with the help of ogive curves.	**1**
	Statement 2: : Mode of a frequency distribution can also be located graphically with the help of ogive curves. Alternatives: a) Both the statements are true. b) Both the statements are false. c) Statement 1 is true and statement 2 is false. c) Statement 2 is true and statement 1 is false.	
11	Extreme scores on an examination have the following effect on the mode: (a) They tend to raise it (b) they tend to lower it (c) They have no effect on it (d) difficult to tell	**1**
12	The mean of 11 numbers is 7. One of the numbers, 13, is deleted. What is the mean of the remaining 10 numbers? (a)7.7 (b) 6.4 (c) 6.0 (d) 5.8	**1**
13	**Which of the following is a characteristic of a mean?** (a) The sum of deviations from the mean is zero (b) It minimises the sum of squared deviations (c) It is affected by extreme scores. (d) All of the above	**1**
14	The model letter of the word 'STATISTICS' is (a) S (b) T (c) Both S and I (d) Both S and T	**1**
15	To calculate the median correctly, what must be done? (a) Arrange all the data in random order (b)Add all the data (c) Arrange all the data in an ascending or descending order (d)All of the above	**1**
16	If a constant value is added to every observation of data, then arithmetic mean is obtained by (a) Subtracting the constant (b) Adding the constant (c) Multiplying the constant (d) Dividing the constant	**1**
17	The mean of 10 observations is 10. All the observations are increased by 10%. The mean of increased observations will be (a) 10 (b)1.1 (c) 10.1 (d) 11	**1**
18	When the values in a series are not of equal importance, we calculate the: (a) Arithmetic mean (b) Geometric mean (c) Weighted mean (d) Mode	**1**
19	We can calculate median graphically by ? (a) Less than ogive (b) more than ogive (c)More than and Less than ogive (d) None	**1**

<table>
<tr><td></td><td></td><td></td></tr>
<tr><td>20</td><td>_____is a positional average.
(a) Mean (b) Median (c) Mode (d) Both (b) and (c)</td><td>1</td></tr>
<tr><td>21</td><td>Which average would be suitable in the following cases? Match the following.
<table>
<tr><td>(i) Average size of readymade garments.</td><td>a) Arithmetic Mean</td></tr>
<tr><td>(ii) Average intelligence of students in a class.</td><td>b) Arithmetic Mean</td></tr>
<tr><td>(iii) Average production in a factory per shift.</td><td>c) Mode</td></tr>
<tr><td>(iv) Average wages in an industrial concern.</td><td>d) Median</td></tr>
<tr><td>a)</td><td>(i) -a (ii)-b(iii)-c (iv)-d</td></tr>
<tr><td>b)</td><td>(i) -c (ii)-b(iii)-a (iv)-d</td></tr>
<tr><td>c)</td><td>(i) -b (ii)-a(iii)-c (iv)-d</td></tr>
<tr><td>d)</td><td>(i) -d (ii)-b(iii)-c (iv)-a</td></tr>
</table></td><td>1</td></tr>
<tr><td>22</td><td>Statement 1- For finding Average height of students, median will be most appropriate measurers of Central Tendency.
Statement 2- Median divides the series in two equal parts .
a) Both are correct
b) Both are incorrect
c) Statement 1 is correct and statement 2 is incorrect
d) Statement 1 is incorrect and statement 2 is correct</td><td>1</td></tr>
<tr><td>23</td><td>Choose the correctly matched pair from the following
<table>
<tr><td>Column A</td><td>Column B</td></tr>
<tr><td>A. Mode</td><td>1. Divides the series in two equal parts .</td></tr>
<tr><td>B. Median</td><td>2. It is the most suitable average for qualitative measurement</td></tr>
<tr><td>C. Mean</td><td>3. it is affected most by the presence of extreme items.</td></tr>
<tr><td>D. Measures of Central tendency.</td><td>4. measures the deviation from actual mean.</td></tr>
</table>
a) A-1
b) B-2
c) C-3
d) D-4</td><td>1</td></tr>
<tr><td>24</td><td>Assertion (A)- Median and mode are called Positional Average.
Reason (R)- these values are worked out on the basis of their position in the series</td><td>1</td></tr>
</table>

	a) Both assertion and reason are true. Reason is the correct explanation of assertion b) Both assertion and reason are true. Reason is not the correct explanation of assertion c) Assertion is true but reason is not d) Reason is true but assertion is not	
25	Assertion (A): Arithmetic mean is considering as best Measures of central tendency. Reason (R):An average must be simple and easy to calculate. (A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A) (B) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A) (C) Assertion (A) is true but Reason (R) is false. (D) Assertion (A) is false but Reason (R) is true.	**1**
26	ASSERTION: A Good average should be capable of further mathematical treatment. REASON: Arithmetic mean is a Mathematical Average. (A) Assertion and reasons both are correct statements and reason is correct explanation for assertion. (B) Assertion and reasons both are correct statements, but reason is not correct explanation for assertion. (C) Assertion is correct statement, but reason is wrong statement. (D) Assertion is wrong statement, but reason is correct statement.	**1**
27	The mean weight of 150 students in a class is 60 kg. The mean of the boys is the class is 70 kg and that of girls is 55kg. Find the number of boys and girls in the class respectively. (A)Boys =50, Girls = 100 (B) Boys =80, Girls = 70 (C) Boys =100, Girls = 50 (D) Boys =60, Girls = 90	**1**
28	Mode can be graphically calculated by the help of ---------- -- . (a) Bar Diagram (b) Histogram (c) Ogive Curve (d) Lorenz Curve.	**1**
29	Median can be graphically calculated by the help of ---------- . (a) Bar Diagram (b) Histogram (c) Ogive Curve (d) Lorenz Curve.	**1**
30	Identify which of the following statements is true? (a) The sum of deviation of items from median is zero. (b) An average alone is not enough to compare series. (c) Arithmetic mean is a positional value. (d) Median is unduly affected by extreme observations.	**1**

<table>
<tr><td>31</td><td>The average rainfall of a city from Monday to Saturday is 0.5 cms. Due to heavy rainfall on Sunday, the average of the whole week rose to 0.7 cms. How much rainfall was on Sunday.</td><td>3</td></tr>
<tr><td>32</td><td>Calculate the value of median of the data given elow:
<table>
<tr><td>X</td><td>160</td><td>150</td><td>152</td><td>161</td><td>156</td></tr>
<tr><td>f</td><td>5</td><td>8</td><td>6</td><td>3</td><td>7</td></tr>
</table></td><td>3</td></tr>
<tr><td>33</td><td>What are essentials of a good average?</td><td>3</td></tr>
<tr><td>34</td><td>What are the purpose of average in statistical method</td><td>3</td></tr>
<tr><td>35</td><td>If the arithmetic mean of the data given below is 28, find (a) the missing frequency
<table>
<tr><td>Profit Per Retail Shop (in ₹)</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td></tr>
<tr><td>Number of Retail Shops</td><td>12</td><td>18</td><td>27</td><td>—</td><td>17</td><td>6</td></tr>
</table></td><td>3</td></tr>
<tr><td>36</td><td>A Candidate obtained the following percentage following of marks in an examination: English 60; Business Studies 75; Maths 63; Accounts 59; Economics 55. Find the candidate's weighted arithmetic mean, if weights 1, 2, 1, 3, 3 respectively are allotted to the subjects</td><td>3</td></tr>
<tr><td>37</td><td>In the following Table you will find the wages given by a factory owner. You have to find the mode wage.
<table>
<tr><td>wages</td><td>10-15</td><td>15-20</td><td>20-25</td><td>25-30</td><td>30-40</td><td>40-60</td><td>60-80</td></tr>
<tr><td>Nonof worker</td><td>7</td><td>10</td><td>27</td><td>15</td><td>12</td><td>12</td><td>8</td></tr>
</table></td><td>3</td></tr>
<tr><td>38</td><td>The mode height of class X students is 15 and mean height is 18 but class teacher wants the height of the who stand in the md of the line.</td><td>3</td></tr>
<tr><td>39</td><td>Following table shows the marks obtained by Miss Sheela in class 12th. College authority has assigned different weight for different subject to select the students' for admission. Find out the weighted Average marks obtained by Sheela.
<table>
<tr><td>subject</td><td>Eng</td><td>Hindi</td><td>Acc</td><td>B St</td><td>Eco</td></tr>
<tr><td>Marks</td><td>50</td><td>45</td><td>55</td><td>65</td><td>60</td></tr>
<tr><td>Weight</td><td>2</td><td>3</td><td>5</td><td>5</td><td>5</td></tr>
</table></td><td>3</td></tr>
<tr><td>40</td><td>Observe the given picture and interpret it in 60-80 words.

</td><td>4</td></tr>
<tr><td>41</td><td>The mean wages of 5 workers in a factory is 100. The wages of four of them are 90,110,150,30 respectively. Calculate the wages of the fifth worker.</td><td>4</td></tr>
</table>

42 — **4**

The marks obtained by class Xi students is given below, on the basis of the information (a) Prepare a frequency array. b) Calculate the arithmetic mean using short cut method.
12,15,18,12,20,25,10,5,4,10,12,15,18,20,20,15,5,5,5,4.

43 — **4**

Thirty women were examined in a hospital by a doctor and the number of heart beats per minute were recorded and summarized as follows. Find the mean heart beats per minute for these women, choosing a suitable method.

Number of heart beats per minute	65–68	68–71	71–74	74–77	77–80	80–83	83–86
Number of women	2	4	3	8	7	4	2

44 — **4**

Following information pertains to the daily income of 150 families. Calculate the arithmetic mean.

Income (in ₹)	Number of Families
More than 75	150
More than 85	140
More than 95	115
More than 105	95
More than 115	70
More than 125	60
More than 135	40
More than 145	25

45 — **4**

State whether, the following statements are true or false and rewrite them.

i) Mode is the value having maximum frequency.

ii) Median is not affected by extreme items.

iii) Arithmetic mean is not based on all observations.

iv) Mean is not rigidly defined.

46 — **4**

Calculate arithmetic mean from the following data:-

Marks	0-10	10-20	20-30	30-40	40-50
No of students	4	6	10	20	10

47 — Discuss the merits and demerits of median. — **4**

48 — Find out mode of the following series using grouping method; — **4**

X	8	9	10	11	12	13	14	15
F	5	6	8	7	9	8	9	6

49 — Calculate median from the following figures: — **6**

X	10-19	20-29	30-39	40-49	50-59	60-69
F	12	19	20	21	15	13

50 — Define arithmetic mean. Explain mathematical properties of arithmetic mean. — **6**

51 — What is Mode? What are merits and demerits of mode? — **6**

52 | Which average would be suitable in the following cases? | **6**

(i) Average size of readymade garments.
(ii) Average intelligence of students in a class.
(iii) Average production in a factory per shift.
(iv) Average wages in an industrial concern.
(v) When quantities of the variable are in ratios.
(vi) In case of open-ended frequency distribution.

53 | The following series relates to the daily income of workers employed in a firm. Compute (a) highest income of lowest 50% workers | **6**

Daily Income (in ₹)	10-14	15-19	20-24	25-29	30-34	35-39
Number of Workers	5	10	15	20	10	5

54 | Give reasons. | **6**

1) Arithmetic mean is measure of central tendency.

2) Mode is that value which has maximum frequency.

3) Mode has a number of merits.

4) Median divides the series into two equal parts.

5) Mean has not any limitations.

6) Median is not affected by remote values.

55 | A survey report shows that 10 student of class 11th has pocket money at an average of ₹1500 per month while cross checking it was found that 1 observation was wrongly written as 800 instead of 200 calculate the correct average of pocket money | **6**

56 | Find the missing frequency in the following distribution if N =100 and median is 32 | **6**

Marks	0-10	10-20	20-30	30-40	40-50	50-60	Total
Students	10	?	25	30	?	10	100

57 | Calculate the median and mode of the following series. | **6**

10-19	8
20-29	6
30-39	20
40-49	50
50-59	20
60-69	2

ANSWER

<table>
<tr><td>1</td><td>Total weight of 8 students=40x8=320 kg
Total weight of 10 students=320+44+36=400
Now Average weight of 10 students=400/10=40kg</td></tr>
<tr><td>2</td><td>b) It is best used with ordinal data.</td></tr>
<tr><td>3</td><td>Total marks scored by 05 students of XI Arts=310
Average marks scored by 05 students of XI A= 310/5=62
Total markes scored by 07 students of XI Commerce=419
Average marks of XI Commerce=419/7 = 64.14
XI commerce performed better</td></tr>
<tr><td>4</td><td>b)Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation for Assertion (A.</td></tr>
<tr><td>5</td><td>Median=145</td></tr>
<tr><td>6</td><td>c) Ascending or descending order</td></tr>
<tr><td>7</td><td>Z= 3Median-2Mean
=56</td></tr>
<tr><td>8</td><td>b) Mode</td></tr>
<tr><td>9</td><td>Mode</td></tr>
<tr><td>10</td><td>c) Statement 1 is true and statement 2 is false.</td></tr>
<tr><td>11</td><td>(d)</td></tr>
<tr><td>12</td><td>(b)</td></tr>
<tr><td>13</td><td>(c)</td></tr>
<tr><td>14</td><td>(d)</td></tr>
<tr><td>15</td><td>(c)</td></tr>
<tr><td>16</td><td>(b)</td></tr>
<tr><td>17</td><td>(c)</td></tr>
<tr><td>18</td><td>(c)</td></tr>
<tr><td>19</td><td>(c)</td></tr>
<tr><td>20</td><td>(d)</td></tr>
<tr><td>21</td><td>B</td></tr>
<tr><td>22</td><td>A</td></tr>
<tr><td>23</td><td>C</td></tr>
<tr><td>24</td><td>A</td></tr>
<tr><td>25</td><td>A</td></tr>
<tr><td>26</td><td>B</td></tr>
<tr><td>27</td><td>A</td></tr>
<tr><td>28</td><td>C</td></tr>
<tr><td>29</td><td>A</td></tr>
<tr><td>30</td><td>B</td></tr>
<tr><td>31</td><td>Total rainfall from Monday to Saturday=0.5x6=3
Total rainfall from Monday to Sunday =0.7x6=4.2
Therefore, Rainfall on Sunday=4.2-3=1.2</td></tr>
<tr><td>32</td><td>Arranging series in ascending order-
<table>
<tr><td>X</td><td>F</td><td>cf</td></tr>
<tr><td>150</td><td>8</td><td>8</td></tr>
<tr><td>152
156</td><td>6
7</td><td>14
21</td></tr>
</table></td></tr>
</table>

	160 161	5 3	26 29
	N=	29	

M= size of N+1/2 th item
= size of 15^{th} item
As 15^{th} item lies in 21 cf group and size against it is 156
Therefore, M= 156

33

Essentials of a good Average:

i. Simple to calculate.
ii. It should be easy to understand.
iii. Rigidly defined.
iv. Based on all items of observation.
v. Least affected by extreme values.
vi. Capable of further algebraic treatment.
vii. Least affected by sampling fluctuation.
viii. Graphic measurement possible.

34

The purpose of average in statistical methods are
i) Brief description
ii) Comparison
iii) Formulation of policies
iv) Statistical analysis

35

Let the missing frequency is f_1.
Arithmetic Mean = 28

Profit Per Retail Shop (in ₹) Class Interval	Number of Retail Shops (f)	Mid Value (m)	fm
0-10	12	5	60
10-20	18	15	270
20-30	27	25	675
30-40	f_1	35	$35f_1$
40-50	17	45	765
50-60	6	55	330
	$\Sigma f = 80 + f_1$		$\Sigma fm = 2100 + 35f_1$

$$\bar{X} = \frac{\Sigma fm}{\Sigma f}$$

or $$28 = \frac{2100 + 35f_1}{80 + f_1}$$

or $$2240 + 28f_1 = 2100 + 35f_1$$

or $2240 - 2100 = 35f_1 = 28f_1$
or $140 = 7f_1$
$f_1 = 20$
Hence, the missing frequency is 20.

36

The information given in the question can be presented as follows:

Subject	Marks *(X)*	Weights *(W)*	*WX*
English	60	1	60
Business studies	75	2	150
Maths	63	1	63
Accounts	59	3	177
Economics	55	3	165
		$\Sigma W=10$	$\Sigma WX=615$

Weighted arithmetic mean $(\bar{X}w)=\Sigma WX/\Sigma W$

$=615/10$

Hence, the weighted arithmetic mean is 61.5 marks

37 22.9 Rupees

38 17

39 56.75

40 Mode=3medan-2mean.

41 120

42 12.5

43

Class interval	Mid value (X)	(f)	d'= (X-A)/i	fd'
65−68	66.5	2	−3	−6
68−71	69.5	4	−2	−8
71−74	72.5	3	−1	−3
74−77	75.5	8	0	0
77−80	78.5	7	1	7
80−83	81.5	4	2	8
83−86	84.5	2	3	6
Total		**30**		**4**

Let's take assumed mean, A as 75.5

Class interval =3

$\bar{x}=A+\sum fd' \times i/\sum f=75.5+3\times 4/30\ /30=75.5+0.4=75.9$

44

Income Class Interval	Number of Families (*cf*)	Frequency (*f*)	Mid Value (*m*)	*fm*
75-85	150	150 – 140 = 10	80	800
85-95	140	140 – 115 = 25	90	2250
95-105	115	115 – 95 = 20	100	2000
105-115	95	95 – 70 = 25	110	2750
115-125	70	70 – 60 = 10	120	1200
125-135	60	60 – 40 = 20	130	2600
135-145	40	40 – 25 = 15	140	2100
145-155	25	25	150	3750
Total		$\Sigma f = 150$		$\Sigma fm = 17,450$

$$\text{Mean} = \frac{\Sigma fm}{\Sigma f} = \frac{17450}{150} = ₹\ 116.33$$

45

i) The given statement is true.

Explanation

Any observation that repeats itself the maximum number of times is the mode of that data. Thus, it would be correct to say that the mode is that observation or value that has the maximum frequency.

ii). The statement is true.

Explanation

The median is the middlemost value of any set of data arranged in an array. It is just a positional average, thereby, is not affected by the presence extreme values.

iii) The given statement is false.

Explanation

The arithmetic mean is the sum total of all observations divided by the total number of observations. It includes all the observations given in the series.

The given statement is false.

iv) The given statement is false.

Explanation

The mean is said to be rigidly defined because even if we use any method of calculation of mean, we will get the same result. In other words, the resultant value remains the same, irrespective of the method we use.

46

Mean=30.2

47

Median (M)

It is defined as the middle value of the series, when the data is arranged in ascending or descending order.

Merits

1. Easy to understand and easy to compute.
2. Not underly affected by extreme observation.
3. It can be located graphically.
4. Appropriate average in case of open end classes.

Demerits:

1. Not based on all observations.
2. It requires arrangement of data.

	3. Not capable o further algebraic treatment.
48	Mode=12
49	Median=39
50	Arithmetic mean is defined as the sum of the values of all observations divide by number of observations. Mathematical Properties of Arithmetic mean i The sum of deviations of the observations from their arithmetic mean is always zero. ii The sum of the squares of the deviations of the items from their Arithmetic mean is minimum. iii If each observation of a series is increased or decreased by a constant, say k, then the arithmetic mean of the new series also get decreased by k. If all the items in a series are replaced by the Mean, then the total of these replaced values will be equal to the sum of individual items, etc.
51	It is the value which occurs the most frequently in a series. <u>Merits of Mode</u> i. It is easy to understand and simple to calculate. ii. Not affected by extreme values. iii. Can be located graphically. iv. Easily calculated in case of open-end classes. <u>Demerits of Mode</u> i. Not rigidly defined. ii. If mode is ill defined, mathematical calculation is complicated. iii. Not based on all items. Not suited to algebraic treatment.
52	Mode Average size of any readymade garments should be the size for which demand is the maximum. Hence, the modal value which represents the value with the highest frequency should be taken as the average size to be produced. (ii) Median It is the value that divides the series into two equal parts. Therefore, Median will be the best measure for calculating the average intelligence of students in a class as it will give the average intelligence such that there are equal number of students above and below this average. It will not be affected by extreme values. (iii) Arithmetic Mean The average production in a factory per shift is best calculated by Arithmetic Mean as it will capture all types of fluctuations in production during the shifts. (iv) Arithmetic Mean Arithmetic Mean will be the most suitable measure. It is calculated by dividing the sum of wages of all the workers by the total number of workers in the industrial concern. It gives a fair idea of average wage bill taking into account all the workers. (v) Median Median will be the most suitable measure in case the variables are in ratios as it is least affected by the extreme values. (vi) Median Median is the most suitable measure as it can be easily computed even in case of open-ended frequency distribution and will not get affected by extreme values.

53

Daily Income (in ₹) Class Interval	Number of Workers (f)	Cumulative Frequency (cf)
9.5-14.5	5	5
14.5-19.5	10	15
19.5-24.5	15	30
24.5-29.5	20	50
29.5-34.5	10	60
34.5-39.5	5	65
	$\Sigma f = 65$	

(a) Highest income of lowest 50% workers will be given by the median. Σf = N = 65

Median class = Size of $(N/2)$th term = Size of $(65/2)$th term=32.5 th term.32.5th item lies in the 50th cumulative frequency and the corresponding class interval (24.5– 29.5).

$$\text{Median} = L + \frac{\frac{N}{2} - cf}{f} x_i$$

$$= 24.5 + \frac{32.5 - 30}{20} \times 5$$

$$= 24.5 + \frac{2.5}{20} \times 5$$

$$= ₹\ 25.13$$

54

1. The central value represents the entire data in the sense that the values of observations in the data lie close to the central value. Arithmetic mean is the average of all items in the series. It is based on all the items in the data. Thus, it can be interpreted as a value that is an indicative of the various items in the data. Hence, we can say that arithmetic mean is a measure of the central tendency.

2. The mode is the observation or value that repeats itself the maximum number of times in the given series. Here, the frequency represents the number of times the value is repeated. Thus, it is correct to say that the mode is the observation or value that has the maximum frequency.

3. Any observation that repeats itself the maximum number of times is called the mode of that data. The following are some of the merits of mode:
i. It is one of the simplest measures of central tendency and can be calculated by the mere inspection of the series.
ii. It can be presented graphically.
iii. It is not affected by the extreme values of the series.
iv. Calculation of mode does not require all the details about the series. It can be calculated for open-ended classes as well.

4. The median is the middlemost value of a set of data when it is arranged in an array (ascending or descending). Half of the items lie after the median and half of the items lie before the median; thus, the median divides the entire series into two equal parts.

5. The mean has both merits and demerits. The following are a few limitations of the mean:
i. It is largely affected by the extreme values of the series.
ii. Because it is based on all observations of the series, it cannot be calculated for open-ended classes.
iii. Sometimes, it gives absurd results, which are impractical.

6. The median is the middlemost value of a set of data when it is arranged in an array

	(ascending or descending). It is just a positional average that is based on the number of observations in the series and not on the values of those observations. In other words, it is the number of observations and not the values of the observations that affect the median. Thus, we can say that the median does not get affected by the remote values.
55	1440
56	X=9, y=16
57	Median=43.3 Mode=44.5