Elementary Statistics Questions

Latest Elementary Statistics MCQ Objective Questions

Question 1:

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The mean of the given data: 12, 51, 22, 42, 32, 18 is

1. 28.5
2. 29.5
3. 27.5
4. More than one of the above
5. None of the above

Answer (Detailed Solution Below)

Option 2 : 29.5

Win over the concepts of Elementary Statistics and get a step ahead with the preparations for Quantitative Aptitude with Testbook.

Elementary Statistics Question 1 Detailed Solution

Given:

Data: 12, 51, 22, 42, 32, 18

Concept:

The **mean** is the average of the numbers.

It is easy to **calculate**: add up all the numbers, then divide by how many numbers there are. In other words, it is the sum divided by the count.

Calculation:

$$\text{Mean} = \frac{12 + 51 + 22 + 42 + 32 + 18}{6} = 29.5$$

∴ The mean of given data is 29.5

Question 2:

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If the ratio of mode and median is 7 : 4, then the ratio of mean and mode is

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1. 7 : 11
2. 5 : 14
3. 2 : 3
4. More than one of the above
5. None of the above

Answer (Detailed Solution Below)

Option 2 : 5 : 14

Elementary Statistics Question 2 Detailed Solution

Given:

Mode : median = 7 : 4

Formula used:

Mode = 3 × median - 2 × mean

Calculations:

Let mode be 7x and median be 4x

7x = 3 × 4x - 2 × Mean

⇒ 7x = 12x - 2 × Mean

⇒ 2 × Mean = 12x - 7x

⇒ 2 × Mean = 5x

⇒ Mean = 5x/2

Ratio of Mean and mode = 5x/2 : 7x

⇒ 5x/14x = 5/14

∴ The ratio of mean and mode is 5 : 14

Question 3:

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Which of the following measure of dispersion is easy to calculate

1. Range
2. standard deviation
3. mean
4. More than one of the above
5. None of the above

Answer (Detailed Solution Below)

Option 1 : Range

Elementary Statistics Question 3 Detailed Solution

Range is the simplest measure of dispersion. We can define range as the difference between the highest and the lowest value in a set of observation For example the range of the series 1, 2, 4, 6, 8, 9, 10, 12

Largest number = 12

Lowest number = 1

Range = L – S = 12 – 1 = 11

∴ Range is the measure of dispersion which is very easy to calculate than other measures of dispersion

Question 4:

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Find the value of a, if the mean of eight observation. a, a - 7, a - 4, a - 9, a - 8, a - 5, a - 12, a - 1, is 34.

1. $\frac{121}{9}$
2. $\frac{146}{7}$
3. $\frac{159}{4}$
4. $\frac{165}{11}$
5. Not Attempted

Answer (Detailed Solution Below)

Option 3 : $\frac{159}{4}$

Elementary Statistics Question 4 Detailed Solution

Given:

Mean of eight observations. a, a - 7, a - 4, a - 9, a - 8, a - 5, a - 12, a - 1, is 34.

Concept used:

Mean = Sum of observation / Number of observations

Calculation:

Sum of observation = a + a - 7 + a - 4 + a - 9 + a - 8 + a - 5 + a - 12 + a - 1 = 8a - 46

Number of observations = 8

$\Rightarrow 34 = \frac{8a - 46}{8}$

$\Rightarrow 272 = 8a - 46$

$\Rightarrow 8a = 272 + 46$

$\Rightarrow a = \frac{318}{8} = \frac{159}{4}$

∴ The value of a is $\frac{159}{4}$.

Question 5:

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What is the mean of the median, mode and range of the following data?

5, 2, 8, 6, 12, 10, 17, 15, 22, 9, 17, 13

1. 16
2. $\frac{49}{3}$
3. 17
4. $\frac{52}{3}$
5. Not Attempted

Answer (Detailed Solution Below)

Option 1 : 16

Elementary Statistics Question 5 Detailed Solution

Given data:

5, 2, 8, 6, 12, 10, 17, 15, 22, 9, 17, 13

Concept used:

Range = maximum data - minimum data

Mean = sum of all observations / total number of observations

Mode:

Mode is the value which occurs the maximum number of times in a given data set.

Median:

average of (n/2)th and [(n/2) + 1]th term ; when n is even.

[(n + 1)/2]th ; when n is odd.

Calculation:

First arrange the given data in ascending or descending order.

⇒ 2, 5, 6, 8, 9, 10, 12, 13, 15, 17, 17, 22

Range = maximum data - minimum data = 22 - 2 = **20**

here, total number of observations are Median = **12**

So, n is even.

Median = average of (n/2)th and [(n/2) + 1]th term = average of 6th and 7th term ⇒ **(10 + 12)/2 = 11**

Mode = 17 (maximum number of times repeated)

Mean of range, median and mode = (Range + Median + Mode)/3

⇒ (20 + 11 + 17)/3 = 48/3 = **16**

∴ The correct answer is "16".

Top Elementary Statistics MCQ Objective Questions

Question 6

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If Mode is 8 and mean – median = 12 then find the value of mean?

1. 48
2. 56
3. 72
4. 44

Answer (Detailed Solution Below)

Option 4 : 44

Elementary Statistics Question 6 Detailed Solution

Given:

If mode = 8 and mean – median = 12

Formula used

Mode = mean – 3 (mean - median)

Mode = 3median - 2mean

Calculation

We know that, Mode = mean – 3(mean -median)

Put the value, 8 = mean – 3 (12)

Mean = 36 + 8 = 44

Question 7 View this Question Online >

Find the variance of the given numbers: 36, 28, 45, and 51.

1. 63.5
2. 68.5
3. 71.5
4. 76.5

Answer (Detailed Solution Below)

Option 4 : 76.5

Elementary Statistics Question 7 Detailed Solution

Mean is the average of the given numbers,

⇒ Mean = (36 + 28 + 45 + 51)/4 = 160/4 = 40

Variance is calculated by taking the average of the squares of the difference between each term and the mean,

⇒ Variance = $[(36 - 40)^2 + (28 - 40)^2 + (45 - 40)^2 + (51 - 40)^2]/4$

= [16 + 144 + 25 + 121]/4 = 306/4 = 76.5

∴ Variance of the given numbers = 76.5

Question 8

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The mean deviation of the data 3, 10, 10, 4, 7, 10, 5 from mean is :

1. 7
2. 19/7
3. 50/7
4. 18/7

Answer (Detailed Solution Below)

Option 4 : 18/7

Elementary Statistics Question 8 Detailed Solution

Given:

Data is 3, 10, 10, 4, 7, 10, 5

Formula used:

Average deviation about the mean

$\sum \frac{|x_i - \bar{x}|}{n}$ where $\bar{x}$ **= Mean**

x_i = individual term

n = total number of terms

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

Calculation:

n = total numbers in a data = 7

Mean $\bar{x}$ = (3 + 10 + 10 + 4 + 7 + 10 + 5)/7 = 7

Mean deviation from mean = $\sum \frac{|x_i - \bar{x}|}{n}$

Mean deviation from mean = (1/7) × [4 + 3 + 3 + 3 + 0 + 3 + 2]

∴ Mean deviation = 18/7

Question 9

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What is the Mode of the following data:

X	32	14	59	41	28	7	34	20
f(x)	8	4	12	8	10	16	15	9

1. 28
2. 14
3. 7
4. 59

Answer (Detailed Solution Below)

Option 3 : 7

Elementary Statistics Question 9 Detailed Solution

Concept:

The mode is the value that appears most often in a set of data values.

Calculation:

32 occurred 8 times

14 occurred 4 times

59 occurred 12 times

41 occurred 8 times

28 occurred 10 times

7 occurred 16 times

34 occurred 15 times

20 occurred 9 times

∴ Mode will be 7

Question 10

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Mean of five consecutive even numbers is 16, find the variance of the numbers.

1. 40
2. 16
3. 8
4. 10

Answer (Detailed Solution Below)

Option 3 : 8

Elementary Statistics Question 10 Detailed Solution

Given:

Mean of five consecutive even numbers = 16

Formula used:

$V = \frac{\sum|x-m|^2}{n}$

$\text{Mean } (m) = \frac{\{2a + (n-1)d\}}{2}$

V = variance

$\sum$ = summation

x = observation

n = number of observations

a = 1st term of the numbers

d = common difference

Calculation:

$\frac{\{2a + (n-1)d\}}{2} = 16$

⇒ 2a + (5 – 1)2 = 32

⇒ 2a + 4 × 2 = 32

⇒ 2a = 32 – 8

⇒ 2a = 24

⇒ a = 12

1st term = 12

Other terms are 14, 16, 18, 20

$V = \frac{(12-16)^2+(14-16)^2+(16-16)^2+(18-16)^2+(20-16)^2}{5}$

$\Rightarrow \frac{16 + 4 + 0 + 4 + 16}{5}$

$\Rightarrow \frac{40}{5}$

⇒ 8

⇒ V = 8

∴ The variance of the numbers is 8

Question 11 View this Question Online >

Find the standard deviation of {7, 13, 15, 11, 4}

1. 16
2. 25
3. 5
4. 4

Answer (Detailed Solution Below)

Option 4 : 4

Elementary Statistics Question 11 Detailed Solution

Given:

7, 13, 15, 11, 4

Formula used:

$$\mathrm{S.D} = \sqrt{\frac{\sum |x - m|^2}{n}}$$

Mean (m) = Total of observations/number of observations

S.D = standard deviation

∑ = summation

x = observation

m = mean of the observations

n = number of observation

Calculation:

Mean of 7, 13, 15, 11, 4

⇒ 50/5

⇒ 10

$\mathrm{S.D} = \sqrt{\frac{(7-10)^2+(13-10)^2+(15-10)^2+(11-10)^2+(4-10)^2}{5}}$

$\Rightarrow \sqrt{\frac{9+9+25+1+36}{5}}$

$\Rightarrow \sqrt{\frac{80}{5}}$

⇒ √16

⇒ 4

∴ The standard deviation is 4

Question 12

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The standard deviation of a data set is given as 34. What will be the variance of the data set?

1. 1122
2. 1156
3. 578
4. 1196

Answer (Detailed Solution Below)

Option 2 : 1156

Elementary Statistics Question 12 Detailed Solution

GIVEN :

The standard deviation of a data set is given as 34.

CONCEPT :

The value of variance is the square of standard deviation.

FORMULA USED :

Standard Deviation = √Variance

CALCULATION :

Using the formula :

Variance of the set of data = 34^2 = 1156

Question 13

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Find Median of the given set: 1, 3, 0, 5, 1, 7, 5, 4, 9, 2, 11, 5, 7, 8.

1. 4.5
2. 5
3. 5.5
4. 4

Answer (Detailed Solution Below)

Option 2 : 5

Elementary Statistics Question 13 Detailed Solution

GIVEN:

Data set: 1, 3, 0, 5, 1, 7, 5, 4, 9, 2, 11, 5, 7, 8.

FORMULA USED:

If n is even:

Median = [(n/2) term + (n/2 + 1) term]/2 after arranging the data in ascending or descending order.

CALCULATION:

1, 3, 0, 5, 1, 7, 5, 4, 9, 2, 11, 5, 7, 8

Set in increasing order

0, 1, 1, 2, 3, 4, 5, 5, 5, 7, 7, 8, 9, 11

n = 14 (even term)

So,

Median = (7^{th} term + 8^{th} term)/2

Median = (5 + 5)/2 = 5

Question 14

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There are four numbers in a set. The mean of the three smallest numbers is 9, whereas the mean of the three largest ones is 11. What is the range of the data set?

1. 3

2. 6

3. 9

4. 5

Answer (Detailed Solution Below)

Option 2 : 6

Elementary Statistics Question 14 Detailed Solution

Let the four numbers be a, b, c and d in increasing order

⇒ Mean of the three smallest number = (a + b + c)/3

⇒ 9 = (a + b + c)/3

⇒ a + b + c = 27 ----(1)

Also,

⇒ Mean of the three largest numbers = (b + c + d)/3

⇒ 11 = (b + c + d)/3

⇒ b + c + d = 33 ----(2)

Subtracting equation 1 from equation 2, we get

⇒ d – a = 6

∴ The range of data set is 6.

Question 15 View this Question Online >

If the difference between the mode and median is 2, then find the difference between the median and mean(in the given order).

1. 2
2. 1
3. 3
4. 4

Answer (Detailed Solution Below)

Option 2 : 1

Elementary Statistics Question 15 Detailed Solution

Concept:

Relation between mode, median and mean is given by:

Mode = 3 × median – 2 × mean

Calculation:

Given:

Mode – median = 2

As we know

Mode = 3 × median – 2 × mean

Now, Mode = median + 2

⇒ (2 + median) = 3median – 2mean

⇒ 2Median - 2Mean = 2

⇒ Median - Mean = 1

∴ The difference between the median and mean is 1.