BYJU'S The Learning App

GMAT

Quant Section Test

[MEAN, MEDIAN AND MODE] - Solutions

1. **Solution:**

Topic: Data Analysis

Concept Tested: Average or Mean

Type of Question: Data Sufficiency (DS)

Given: There are 7 consecutive integers**.**

Question: Mean of the 7 digits.

Let the first integer be x, then the average of seven integers can be calculated as follows:

$$\frac{x+x+1+x+2+x+3+x+4+x+5+x+6}{7} = ?$$

Or $\frac{7x+21}{7} = ?$

Or $x + 3 = ?$

Statement I is sufficient:

Given that the average of first 5 digits is 7

Similarly $\frac{x+x+1+x+2+x+3+x+4}{5} = 7$

Or $\frac{5x+10}{5} = 7$

Solving the above equation, $x = 5$.

Hence the average is 8.

Therefore, Statement I by itself is sufficient to answer the question asked.

So, eliminate B, C and E.

The answer will be either A or D.

Statement II is sufficient:

Given that the average of last 5 digits is 9

Similarly $\frac{x+2+x+3+x+4+x+5+x+6}{5} = 9$

Or $\frac{5x+20}{5} = 9$

Solving the above equation, $x = 5$.

Hence the average is 8.

Therefore, Statement II by itself is sufficient to answer the question asked.

So, eliminate A.

Hence, the answer is D.

2. **Solution:**

Topic: Data Analysis

Concept Tested: Median

Type of Question: Problem Solving (PS)

Given: Set S consists of the following unique integers: -2, 17, 3, n, 2, 15, -3, and -27

Question: To find the median, first we need to arrange the numbers as -27, -3, -2,2,3,15,17 and somewhere we need to insert 'n' according to the condition.

Since we have eight numbers, the median is the average of the middle to numbers.

Let us play with the choice:

A. 1

If 1 is the median, then the sum of the middle two numbers should be 2.

We have already 2, in the 4^{th} position, hence the number we can insert is '0' in the place of 'n'.

Since we got the solution there, there is no need to check with the rest of the choices.

Hence, the answer is A.

3. **Solution:**

Topic: Data Analysis

Concept Tested: Median

Type of Question: Data Sufficiency (DS)

Given: There are 3numbers x, y and z.

Question: Is y the median of x, y and z?

Statement I is insufficient:

Given that y/x=z/y

Cross multiply, we get

$y^2 = xz$

So, we can conclude that x, y and z are in a geometric progression with 'y' as their geometric mean.

Note: For 3 positive numbers a, b, and c that are in geometric sequence or for 3 negative numbers x, y, and z, 'y' will be the geometric mean and the median.

Essentially, if the the ratio between any two consecutive terms of a GP will always be the same and is known as the common ratio. Common ratio of a geometric sequence is positive; the terms of the sequence will be all positive or all negative

However, 'y' will not be the median or the middle term if all 3 terms are not positive.
For e.g., let 'x' be 2 and let the common ratio be -2

The 3 terms of the geometric sequence are 2, -4 and 8.

Writing the 3 terms in ascending order, we get -4, 2, and 8.

In this case, the median is 2 - which is the first term 'x'
Because, we do not know whether the 3 terms x, y, and z are all positive, we cannot determine whether 'y' is the median.
Therefore, Statement I by itself is insufficient to answer the question asked.

So, eliminate A and D.

The answer will be either B, C or E.

Statement II is insufficient:

Given that xy<0

The product of two numbers is negative if one of the numbers is negative and the other is positive. So, from this statement we can conclude that one of x or y is negative and the other is positive.

However, this information alone is not sufficient to determine whether y is the median of the 3 numbers.
For instance, x = -4, y = 5 and z = 10, then y will be the median.
Conversely, x = -4 , y = 5 and z = -15, then x will be the median.
Therefore, Statement II by itself is insufficient to answer the question asked.

So, eliminate B.

The answer will be either C or E.

Combine both Statements:
Let us combine the two statements.
For the 3 numbers a, b, and c from the two statement we know that baba = cbcb and ab < 0
We know from statement 1 that y is the geometric mean of x, y and z.
We know from statement 2 that one of x or y is negative.
Therefore, we can conclude that the three numbers x, y and z are not all positive nor all negative.
We can further conclude that the common ratio of the geometric sequence is negative.
'y' will be median only if the common ratio of the geometric progression is positive.
We can therefore, answer conclusively using the two statements that 'y' is not the median.
The information given in the two statements taken together is sufficient to answer the question that is “no”.

Therefore, combing Statement I and II is sufficient to answer the question asked.

So, eliminate E.

Hence, the answer is C.

4. **Solution:**

Topic: Data Analysis

Concept Tested: Median and mode

Type of Question: Problem Solving (PS)

Given: List S is comprised of six distinct positive integers less than or equal to 10

Since the numbers are not given, let us plug and play.

S ={ 1,2,3,4,5,6}

From this median is 3.5, mean is also 3.5 and there is no mode.

We can eliminate I and II.

Simultaneously we can eliminate A,B and C.

Since according to the question, we must take only distinct or different integer only, there will be no mode in all the cases.

Hence, the answer is D.

5. **Solution:**

Topic: Data Analysis

Concept Tested: Weighted Average(Mean)

Type of Question: Data Sufficiency (DS)

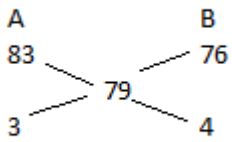
Given: There are 3 classes and their average scores are 83, 76 and 85 respectively.

Question: What is the average score of all the three classes?

Statement I is insufficient:

From this statement, we can find the ratio of students in class A and B by alligation method,

A:B is given by 3:4



From this ratio we cannot find the total score or average of all three classes.

Therefore, Statement I by itself is insufficient to answer the question asked.

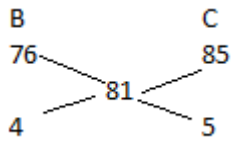
So, eliminate A and D.

The answer will be either B, C or E.

Statement II is insufficient:

From this statement, we can find the ratio of students in class B and C by alligation ratio,

B:C is given by 4:5



From this ratio we cannot find the total score or average of all three classes.

Therefore, Statement II by itself is insufficient to answer the question asked.

So, eliminate B.

The answer will be either C or E.

Combine Both Statements:
By both statements together,
We can find the overall ratio of the number of students in class A,B and C.
A : B : C = 3 : 4 : 5
The total average can be calculated as follows:

$$\frac{3*83+4*76+5*85}{3+4+5}$$
$$\frac{249+304+425}{12}=81.5$$

Therefore, combing Statement I and II is sufficient to answer the question asked.

So, eliminate E.

Hence, the answer is C.

BYJU'S - GMAT

Plot No.23, Indraprastha Equinox, 100 Feet Rd, Venkappa Garden,
Koramangala, Bengaluru, Karnataka 56009

088845 44444 gmat@byjus.com https://byjus.com/gmat