

MATHS

BOOKS - RS AGGARWAL MATHS (HINGLISH)

MEAN, MEDIAN, MODE OF GROUPED DATA CUMULATIVE FREQUENCY GRAPH AND OGIVE

Exercise 18A

1. If the mean of 5 observations x , $x+2$, $x+4$, $x+6$, and $x+8$ is 11, find the value of x ,

A. 5

B. 6

C. 7

D. 8

Answer: C



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2. If the mean of 25 observations is 27 and each observation is decreased by 7 what will be the new mean ?

A. 26.72

B. 27

C. 34

D. 20

Answer: D



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Exercise 18F

1. A data has 25 observations arranged in a descending order. Which observation represents the median?

Answer: 13th



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2. For a certain distribution, mode and median were found to be 1000 and 1250 respectively. Find mean for this distribution using an empirical relation

Answer: 1375



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3. Find the class marks of classes 10-25 and 35-55.

Answer: 17.5,45



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4. While calculating the mean of a given data by the assumed-mean method, the following values were obtained:

$$A = 25, \Sigma f_1 d_1 = 110, \Sigma f_1 = 50$$

Find the mean.

Answer: 27.2



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5. The distributions X and Y with total number of observations 36 and 64, and mean 4 and 3 respectively are combined.

What is the mean of the resulting distribution

$X + Y$?

Answer: 3.36



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6. In a frequency distribution table with 12 classes, the class-width is 2.5 and the lowest class boundary is 8.1, then what is the upper class boundary of the highest class?

Answer: 38.1



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7. The observations 29, 32, 48, 50, x , $x + 2$, 72, 78, 84, 95 are arranged in ascending order. What is the value of x if the median of

the data is 63?

Answer: 62



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8. The median of 19 observations is 30. Two more observations are made and the values of these are 8 and 32. Find the median of the 21 observations taken together.

HINT Since 8 is less than 30 and 32 is more than 30, so the value of median (middle

value) remains unchanged

Answer: 30



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9. If the median of

$\frac{x}{5}, \frac{x}{4}, \frac{x}{2}, x$ and $\frac{x}{3}$, where $x > 0$, is 8,

find the value of x

HINT Arranging the observation in ascending

we have $\frac{x}{5}, \frac{x}{4}, \frac{x}{3}, \frac{x}{2}, x$

$$\text{Median} = \frac{x}{3} = 8$$

Answer: 24



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Multiple Choice Questions (Mcq)

1. Which of the following is not a measure of central tendency

A. Mean

B. Mode

C. Median

D. Range

2. Which of the following cannot be determined graphically

A. Mean

B. Median

C. Mode

D. None of these



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3. Which of the following measures of central tendency is influenced by extreme values

A. Mean

B. Median

C. Mode

D. None of these



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4. The mode of a frequency distribution is obtained graphically from

- A. a frequency curve
- B. a frequency polygon
- C. a histogram
- D. an ogive



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5. The median of a frequency distribution is found graphically with the help of

- A. a histogram

B. a frequency curve

C. a frequency polygem

D. ogives



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6. The cumulative frequency table is useful in determining the

A. mean

B. median

C. mode

D. all of these



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7. The abscissa of the point of intersection of the Less Than Type and of the More Than Type cumulative frequency curves of a grouped data gives its

A. mean

B. median

C. mode

D. none of these



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8. If x_i 's are the mid-points of the class intervals of grouped data, f_i 's are the corresponding frequencies and \bar{x} is the mean, then $\sum (f_i x_i - \bar{x})$ equal to

A. 1

B. 0

C. -1

D. 2



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9. In the formula $\bar{x} = a + h \frac{\sum f_i u_i}{\sum f_i}$

for finding the mean of grouped frequency distribution u_i is equal to

A. $\frac{(A - x_i)}{h}$

B. $\frac{(x_i - A)}{h}$

C. $\frac{(A + x_i)}{h}$

D. $h(x_i - A)$



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10. In the formula $\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$

for finding the mean of grouped data d_i 's
and deviation from a of

A. lower limits of the classes

B. upper limits of the classes

C. midpoints of the classes

D. none of these



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11. While computing mean of grouped data, we assume that the frequencies are

A. evenly distributed over the classes

B. centred at the class marks of the
classes

C. centred at the lower limits of the classes

D. centred at the upper limits of the classes



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12. The relation between mean, mode and median is

A.

$$\text{mode} = (3 \times \text{mean}) - (2 \times \text{median})$$

B.

$$\text{mode} = (3 \times \text{median}) - (2 \times \text{mean})$$

C.

$$\text{median} = (3 \times \text{mean}) - (2 \times \text{mode})$$

D.

$$\text{mean} = (3 \times \text{median}) - (2 \times \text{mode})$$



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13. If the 'less than type' ogive and 'more than type' ogive intersect each other at (20.5, 15.5) then the median of the given data is

A. 5.5

B. 15.5

C. 20.5

D. 36



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14. MODE - Definition and How to calculate

MODE of Distribution.

$$\text{A. } x_k + h. \left\{ \frac{(f_{k-1} - f_k)}{(2f_k - f_{k-1} - f_{k+1})} \right\}$$

$$\text{B. } x_k + h. \left\{ \frac{(f_k - f_{k-1})}{(2f_k - f_{k-1} - f_{k+1})} \right\}$$

$$\text{C. } x_k + h. \left\{ \frac{(f_k - f_{k-1})}{(f_k - 2f_{k-1} - f_{k+1})} \right\}$$

$$\text{D. } x_k + h. \left\{ \frac{(f_k - f_{k-1})}{(f_k - f_{k-1} - 2f_{k+1})} \right\}$$



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15. Median=

$$\text{A. } l + \left\{ h \times \frac{\left(\frac{N}{2} - cf\right)}{f} \right\}$$

$$\text{B. } l + \left\{ h \times \frac{\left(cf - \frac{N}{2}\right)}{f} \right\}$$

$$\text{C. } l - \left\{ h \times \frac{\left(\frac{N}{2} - cf\right)}{f} \right\}$$

D. none of these

Answer: A



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16. If the mean and median of a set of numbers are 8.9 and 9 respectively then the mode will be

A. 7.2

B. 8.2

C. 9.2

D. 10.2



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17. The mean and mode of a frequency distribution are 28 and 16 respectively .The median is

A. 22

B. 23.5

C. 24

D. 24.5



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18. The median and mode of a frequency distribution are 26 and 29 respectively. Then , the mean is

A. 27.5

B. 24.5

C. 28.4

D. 25.8

Answer: B



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19. For a symmetrical frequency distribution ,
we have

A. mean lt mode lt median

B. mean gt mode gt median

C. mean = mode = median

D. mode = $\frac{1}{2}$ (mean + median)



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20. The median of first 8 prime numbers is

A. 7

B. 9

C. 11

D. 13



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21. The average of 20 numbers is zero. Of them, at the most how many may be greater than zero?

A. 0

B. 1

C. 10

D. 19



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22. If the median of the data 4,7,x-1,x-3,16,25, written in ascending order is 13 then x is equal to

A. 13

B. 14

C. 15

D. 16



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23. The mean of 2,7,6 and x is 5 and the mean of 18,1,6, x and y is 10 What is the value of y

A. 5

B. 10

C. 20

D. 30



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Test Yourself

1. Which one of the following measures is determined only after the construction frequency distributions

A. Mean

B. Median

C. Mode

D. None of these

Answer: B



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2. If the mean of a data is 27 and its median is 33 then the mode is

A. 30

B. 43

C. 45

D. 47

Answer: C



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3. If the mean and mode of a frequency distribution be 53.4 and 55.2 respectively, find the median

Answer: 54



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