MATHS

BOOKS - RS AGGARWAL MATHS (HINGLISH)

MEAN , MEDIAN AND MODE OF UNGROUPED DATA

Solved Examples

1. The heights of five players are $153cm, 140cm, 148cm, 150cm$ and $154cm$ respectively. Find them mean height of the five players.

2. Find the mean of the first six multiples of 3.

   A. 10.5

   B. 12

   C. 21

    D. none of these

Answer: A

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3. Find the mean of first eight prime numbers.

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4. if the mean of $6, 8, 9, x, 13,$ is $10,$ find the value of x.

A. 15

B. 14

C. 16

D. 17

Answer: B

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5. If the mean of the observation

$x, x + 3, x + 5, x + 7$ and $x + 10$ is 9, then

mean of the last three observations is

A. $\dfrac{34}{3}$

B. 31

C. 32

D. 33

Answer: A

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

7. The mean of the height of six girls is 148 cm. if the individual heights of five of them are $150cm$, $146cm$, $142cm$ and $145cm$, find the height of the sixth girl.

A. 161 cm

B. 151 cm

C. 171

D. 181

Answer: B

8. The mean of 40 numbers was found to be $38.$ Later on, it was detected that a number 56 was misread as $36.$ find the correct mean of the given numbers.

A. 40.5

B. 38.5

C. 34.5

D. 48.5

Answer: B

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9. The mean of 25 observation 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. 33

B. 38

C. 36

D. 46

Answer: C

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10. The mean of 100 iterms was found to be 64.
Later on it was discovered that two items were
misread as 26 and 9 instead of 36 and 90
respectively. Find the correct mean.

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11. The mean weight of a class of 35 student is 45 kg. if the weight of the teacher be included, the mean weight increases by 500g. Find the weight of the teacher.

12. The aveage temperature of Monday, Tuesday and Wednesday was $40°C$. The average temperature of Tuesday, Wednesday and Thursday was $41°C$. If the temperature on

Thursday was $42° C$ what was the temperature on Monday ?

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13. A cricketer has a mean score of 58 runs in nine innings. Find out how many runs are to be scored by him in the tenth innings to raise the mean score to 61.

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14. Batsman in his 12th inning makes a score of 63 runs and thereby increases his average score by 2. His average after the $12th$ inning will be :

15. A train travels between two stations A and $B.$ While going from A to $B,$ its average speed is 80 km/hr, and when coming back from B to $A.$ Its average speed is 120 km/hr. find the average speed of the train during the whole journey.

A.   96 km/hr

B.   94 km/hr

C.   95 km/hr

D.   90 km/hr

Answer: A

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16. The mean of 8 numbers is 25. If 5 is subtracted from each number, what will be the new mean ?

A. 26

B. 24

C. 20

D. 22

Answer: C

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17. The mean of 16 numbers is 8. If 2 is added to every number, what will be the new mean?

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18. There are 50 numbers. Each number is subtracted from 53 and the mean of the number so obtained is found to be $= 3.5$. The mean of the given number is

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19. The following table shown the weights of 12 persons of a health clud:

Weight (in kg)	67	70	72	73	75
Number of persons	4	3	2	2	1

Find the mean weight per person.

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20. The heights of 100 plants in a garden are given below :

Height (in cm) x_i	60	64	68	72	76
Number of plants f_i	5	16	40	30	9

find the mean height per plant.

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21. If the mean of the following data is 18.75 , find the value of p.

x_i	10	15	p	25	30
f_i	5	10	7	8	2

22. The mean of the following data is 21.6 find the value of p.

x_i	6	12	18	24	30	36
f_i	5	4	p	6	4	6

A. 5

B. 6

C. 7

D. 8

Answer: A

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23. The mean of the following frequency distribution is 1.46.

No. of accidents (x)	0	1	2	3	4	5	Total
No. of drivers (f)	46	?	?	25	10	5	200

Find the missing frequencies.

A. 76, 38

B. 36, 75

C. 39, 66

D. 30, 79

Answer: A

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24. The runs scored by 11 members of a cricket team are

15,29,43,13,31,50,20,0,27,56,34

find the median score.

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25. The weights of 10 students (in kilograms) are

36,45,31,52,35,40,55,60,38,44   Find   the   median

weight

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26. Ten observations 6,14,15,17,x+1,2x-13,30,32,34,34 are written in an ascending order. The median fo the data is 24. find the value of x.

27. Find the mediann of the data 61,92,41,57,43,71,58,99,108. fi 58 is replaced by 85, what will be the new median ?

28. Arranging the given data in an ascending order, we get

14,14,14,14,17,18,18,18,22,23,25,28

Here, 14 occurs most often .

Hence , mode of the given data =14.

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29. The point scored by a basketball team in a series of matches are as follows

17, 2, 7, 27, 25, 5, 14, 17, 18, 24, 25, 27, 28, 48.

Find the median and mode of the above data .

30. 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 the mean, median and mode of these scores.

31. In a mathematics test given to 15 student , the following makes (out of 100) are recorded :

52, 60, 42, 40, 98, 52, 48, 39, 41, 62, 46, 52, 54, 40, 96

find the mean, median and mode of the given data

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Exercise 18 A

1. Find the mean of :

(i) The first eight natural numbers

(ii) the first ten odd numbers

(iii) the frist seven multiples of 5.

(iv) all the factors of 20

(v) all prime numbers between 50 and 80.

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2. The number of children in 10 families of a locality are 2,4,3,4,2,0,3,5,1,6. Find the mean number of children per family.

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3. The followings are the numbers of books issued in a school library during a week .

105,216,322,167,273,405,and 346

find th avegage number of books issued per day.

4. The daily minimum temperature recorded (in $.^\circ F$) at a place during six days of a week was as under :

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
35.5	30.8	27.3	32.1	23.8	29.9

find the mean temperature .

5. if the mean of five observations x, x+2,x+4,x+6,x+8 is 13 , find the value of x and hence find the mean of the last three observations.

6. The mean weight of 6 boys in a group is 48 kg. the individual weight of five of them are

51kg,45kg,49kg,46kg and 44kg. Find the weight of the sixth boy.

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7. The mean of the marks scored by 50 students was found to be 39 later on, it was observed that a score was 43 was misread as 23 find the correct mean.

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8. The mean of 24 numbers is 35. if 3 is added to each number, what will be the new mean ?

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9. The mean of 20 numbers is 43. if 6 is subtracted from each of the numbes what will be the new mean ?

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10. The mean of 15 numbers is 27. if each number is multiplied by 4, what will be the mean of the new numbers ?

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11. The mean of 12 numbers is 40. if each number is divided by 8, what will be the mean of the new numbers ?

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12. The mean of 20 numbers is 18. if 3 is added to each of the first ten numbers, find the mean of the new set of 20 numbers.

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13. The mean of six numbers is 23. If one of the numbers is excluded , the mean of the remaining numbers is 20. find the excluded number.

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14. The average height of 30 boys was calculated to be 150 cm. it was detected later that one value of 165 cm was wrongly copied as 135 cm for the computations of the mean. Find the correct mean.

15. The mean weight of a class of 35 student is 45 kg. if the weight of the teacher be included, the mean weight increases by 500g. Find the weight of the teacher.

16. In a class there are 50 students. Their average weight is 45 kg. When a student leaves the class, the average is reduced by 100 g. Find the weight of the student who left the class.

17. The average weight of a class of 39 students is 40 kg. when a new student is admitted to the

class, the averages decreases by 200 g. find the weight of the new student.

18. The average weight of 15 oarsmen in a boat is increased by $1.6kg$ when one of the crew, who weighs 42 kg is replaced by a new man. Find the weight of the new man (in kg).

19. The mean of 8 numbers is 35. if a number is excluded then the mean is reduced by 3. find the excluded number.

20. The mean of 150 items was found to be 60. Later on, it was discoverved that the values of two items were misread as 52 and 8 instead of 152 and 88 respectively. Find the correct mean.

21. The average of 11 results is 60. If the average of first six results is 58 and that of last six is 63, find the 6th result. (a) 66 (b) 55 (c) 64 (d) 68

22. The mean 11 numbers is 42. if the mean of the frist 6 numbers is 37 and that of the last 6 numbers is 46, find the 6th number.

23. The mean weight of 25 students of a class is 52 kg. if the mean weight of the first 13 student of the class is 48 kg and that of the last 13 students is 55kg , find the weight of the 13th student.

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24. The mean score of 25 observations is 80 and the mean score of another 55 observations is 60. Determine the mean score of the whole set of observations.

25. Arun scored 36 marks in English , 44 marks in Hindi, 75 marks in mathemations and x marks in science . If the has secured an average of 50 marks, five the value of x.

26. A ship sails out an island at the rate of 15km/hr and sails back to the starting point at

10km/hr . Find the average sailing speed an average speed for the whole journey.

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27. There are 50 students in a class, of which 40 are boys. The average weight of the class is 44 kg and that of the grils is 40 kg. find the average weight of the boys.

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28. The aggregate monthly expenditure of family was ₹18720 during the first 3 months. ₹20340 during the next 4 months and ₹21708 during the last 5 months of year. If the total savings during the year be ₹35340 find the average monthly income of the family.

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29. The mean monthly salary paid to 75 workers in a factory is Rs 5680. The mean salary of 25 of them is Rs 5400 and that of 30 others is Rs 5700.

The mean salary of the remaining workers is (a)

Rs 5000 (b) Rs 6000 (c) Rs 7000 (d) Rs 8000

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30. The mean marks (out of 100) of boys and girls in an examinatin are 70 and 73, respectively. If the sum mean marks of all the students in that examination is 71, find the ratio of the number of boys to the number of girls.

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31. The average monthly salarly monthly salary of 20 workers in an office is ₹45900. if the mangers's salary is added then average becomes ₹ 49200 per month. What's manger's monthly salary ?

Exercise 18 B

1. Obtain the mean of the following distribution :

Variable (x_i)	4	6	8	10	12
Frequency (f_i)	4	8	14	11	3

2. The following table shows the weights of 12 workers in a factory :

Weight (in kg)	60	63	66	69	72
No. of workers	4	3	2	2	1

find the mean weight of the workers.

3. The measurements (in mm) of the diameters of the heads of 50 screws are given below :

Diameter (in mm) (x_i)	34	37	40	43	46
Number of screws (f_i)	5	10	17	12	6

Calculate the mean diameter of the heads of the screws.

4. The followings data give the number of boys of a particular age in a class of 40 students

Age (in years)	15	16	17	18	19	20
Frequency (f_i)	3	8	9	11	6	3

Calculate the mean age of the students.

5. Find the mean of the followings frequency distribution :

Variables (x_i)	10	30	50	70	89
Frequency (f_i)	7	8	10	15	10

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6. Find the mean of daily wages of 40 workers in a factory as per data given below:

Daily wages (in ₹) (x_i)	250	300	350	400	450
Number of workers (f_i)	8	11	6	10	5

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7. If the mean of the following dat is 20.2, then find the value of p.

x	10	15	20	25	30
f	6	8	p	10	6

A. $p = 20$

B. $p = 30$

C. $p = 10$

D. $p = 50$

Answer: A

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8. The mean of the following data is 8.

x	3	5	7	9	11	13
y	6	8	15	p	8	4

Then, the value of p is

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9. Find the missing frequency p for the following

frequency distributions whose mean is 28.25.

x	15	20	25	30	35	40
f	8	7	p	14	15	6

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10. Find the value of p for the following frequency distribution whose mean is 16.6.

x	8	12	15	p	20	25	30
f	12	16	20	24	16	8	4

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11. Find the missing frequencies in the following frequency distribution whose mean is 34.

x	10	20	30	40	50	60	Total
f	4	f_1	8	f_2	3	4	35

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12. Find the missing frequencies in the following frequncy distribution whose mean is 50.

13. Find the value of p, when the following distribution is 20.

x	15	17	19	20 + p	23
f	2	3	4	5p	6

14. The mean of the following distribution is 50.

x	10	30	50	70	90
f	17	$5a + 3$	32	$7a - 11$	19

Find the value of a and hence the frequencies of 30 and 70.

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Exercise 18 C

1. find the median of:

(i) 2,10,9,9,5,2,3,7,11

(ii) 15,6,16,8,22,21,9,18,25

(iii) 20,13,18,25,6,15,21,9,16,8,22

(iv) 7,4,2,5,1,4,0,10,3,8,5,9,2

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2. Find the median of:

(i) 17,19,32,10,22,21,9,35

(ii) 72,63,29,51,35,60,55,91,85,82

(iii) 10,75,3,15,9,47,12,48,4,81,17,27

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3. The marks of 15 students in an examinations are

25,19,17,24,23,29,31,40,19,20,22,26,17,35,21.

find the median score.

4. The heights (in cm) of 9 students of a class are

148,144,152,155,160,147,150,149,145.

find the median height.

5. the weights (in kg) of 8 children are ltbr.

13.4,10.6,12.7,17.2,14.3,15,16.5,9.8

Find the median age.

6. The age (in years) of 10 teachers in a school are

32,44,53,47,37,54,34,36,40,50.

7. If 10,13,15,18,x+1,x+3,30,32,35,41 are ten observations in an ascending order with median 24, find the value of x.

8. The following obsevations are arranged in ascending order :

26,29,42,53,x,x+2, 70,75,82,93

if the median is 65, find the value of x.

9. Numbers

$$50, \ 42, \ 35, \ 2x + 10, \ 2x - 8, \ 12, \ 11, \ 8 \quad \text{are}$$

written in descending order and their median is

25, find x

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10. Find the median of the data

46,41,77,58,35,64,87,92,33,55,90

In the above data, if 41 and 55 are replaced by 61

and 75 respectively, what will be the new median

?

Exercise 18 D

1. Find the mode of the following iterms.

0,6,5,1,6,4,3,0,2,6,5,6

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2. Determine the mode of the following values of

a variable.

23,15,25,40,27,25,22,25,20

3. Calculate the mode of the following sizes of shoes sold by a shop on a particular day.

5,9,8,6,9,4,3,9,1,6,3,9,7,1,2,5,9

4. A cricket player scored the following runs in 12 one-day matches :

50,30,9,32,60,50,28,50,19,50,27,35.

find his modal score.

5. If the mean of the data 3,21,25,17,(x+3),19,(x-4) is 18, find the value of x. Using this value of x. find the mode of the data.

6. The numbers 52,53,54,54,(2x+1),55,55,56,57 have been arranged in an ascending order and their median is 55. find the value of x and hence of the given data.

7. For what value of x is the mode of the data

24,15,40,23,27,26,22,25,20 ,x+3 found 25 ? Using of

x, find the median.

8. The numbers 42,43,44,44,

(2x+3),45,45,46,47,have been arranged in as

ascending order and their medain is 45. find the

value of x. Hence , find the mode of the above data.

Multiple Choice Questions Mcq

1. If the mean of five observations $x, x + 2, x + 4, x + 6, x + 8 \, is \, 11,$ then the mean of first three observations is

A. 5

B. 6

C. 7

D. 8

Answer: C

2. If the mean of the observation x, x+3, x+5, x+7

and x+10 is 9, then mean of the last three

observations is

A. $10\dfrac{1}{3}$

B. $10\dfrac{1}{2}$

C. $11\dfrac{1}{3}$

D. $11\dfrac{2}{3}$

Answer: C

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3. if $\bar{x}$ is the mean of

$x_1, x_2, x_3, \ldots, x_n$ then $\displaystyle\sum_{n}^{i=1} (x_i - \bar{x}) = ?$

4. If each observation of the data is decreased by 8 then their mean

    A. remains the same

    B. is decreased by 8

    C. is increased by 5

    D. becomes 8 times the original mean

Answer: b

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5. The mean weight of 6 boys in a group is 48 kg. the individual weight of five of them are 51kg, 45 kg, 49kg, 46kg and 44kg. Find the weight of the sixth boy.

A. 52 kg

B. 52.8 kg

C. 53 kg

D. 47 kg

Answer: c

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6. The mean of the marks scored by 50 students was found to be 39 later on, it was observed that a score was 43 was misread as 23 find the correct mean.

   A. 38.6

   B. 39.4

   C. 39.8

   D. 39.2

Answer: B

7. The mean of 100 items was found to be 64. Later on it was discovered that two items were misread as 26 and 9 instead of 36 and 90 respectively. The correct mean is

A. 64.86

B. 65.31

C. 64.91

D. 64.61

Answer: c

8. The mean of 100 observation is 50. If one of the observation which was 50 is replaced by 150, the resulting mean will be

A. 50.5

B. 51

C. 51.5

D. 52

Answer: B

9. Let $\bar{x}$ be the mean of $x_1, x_2, \ldots\ldots\ldots, x_n$ and $\bar{y}$ be the mean of $y_1, y_2, \ldots\ldots\ldots, y_n$. If $\bar{z}$ is the mean of

$x_1, x_2, \ldots\ldots\ldots\ldots\ldots x_n, y_1, y_2, \ldots\ldots\ldots\ldots, y_n$

, then $\bar{z}$ is equal to

A. $(\bar{x} + \bar{y})$

B. $\dfrac{1}{2}(\bar{x} + \bar{y})$

C. $\dfrac{1}{n}(\bar{x} + \bar{y})$

D. $\dfrac{1}{2n}(\bar{x} + \bar{y})$

Answer: b

10. If $\bar{x}$ is the mean of $x_1, x_2, \ldots\ldots\ldots\ldots, x_n$, then for $a \neq 0$, the mean of $ax_1, ax_2, \ldots\ldots\ldots, ax_n, \dfrac{x_1}{a}, \dfrac{x_2}{a}, \ldots\ldots\ldots\ldots, \dfrac{x_n}{a}$ is

A. $\left(a + \dfrac{1}{a}\right)\bar{x}$

B. $\left(a + \dfrac{1}{a}\right)\dfrac{\bar{x}}{2}$

C. $\left(a + \dfrac{1}{a}\right)\dfrac{\bar{x}}{n}$

D. $\dfrac{\left(a + \frac{1}{a}\right)\bar{x}}{2n}$

Answer: B

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11. If $\bar{x}_1, \bar{x}_2, \bar{x}_3, \ldots\ldots\ldots\bar{x}_n$ are the means of n groups with $n_1, n_2, \ldots\ldots\ldots\ldots, n_n$ number of observations, respectively, then the mean $\bar{x}$ of all the groups taken together is given by

A. $\displaystyle\sum_{i=1}^{n} n_i \bar{x}_i$

B. $\displaystyle\sum_{i=1}^{n} \dfrac{n_i \bar{x}_i}{n^2}$

C. $\dfrac{\sum_{i=1}^{n} n_i \bar{x}_i}{\sum_{i=1}^{n} (n_i)}$

D. $\displaystyle\sum_{i=1}^{n} \dfrac{n_i \bar{x}_i}{2n}$

Answer: C

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12. The mean of the following data is 8.

x	3	5	7	9	11	13
y	6	8	15	p	8	4

Then, the value of p is

A. 23

B. 24

C. 25

D. 21

Answer: C

13. The runs scored by 11 members of a cricket team are

15,34,56,27,43,29,31,13,50,20,0.

The median score is

A. 27

B. 29

C. 31

D. 20

Answer: B

14. The weight of 10 students (in kg) are

55,40,35,52,60,38,36,45,31,44.

The median weight is

A. 40 kg

B. 41 kg

C. 42 kg

D. 44kg

Answer: C

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15. The median of the numbers 4,4,5,6,7,7,12,3,12 is

A. 4

B. 5

C. 6

D. 7

Answer: C

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16. The median of the numbers 84,78,54,56,68,22,34,45,39,54 is

A. 45

B. 49.5

C. 54

D. 56

Answer: C

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17. Mode of the data

15,17,19,14,18,15,14,20,19,14,15,19,14 is

A. 14

B. 15

C. 16

D. 17

Answer: A

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18. The median of the data arranged in

ascending order

$8, 9, 12, 18, (x + 2), (x + 4), 30, 31, 34, 39,$ is

24. The value of x is

A. 22

B. 21

C. 20

D. 24

Answer: B