



## MATHS

### BOOKS - RD SHARMA MATHS (ENGLISH)

## STATISTICS

#### Others

1. Find the median of the following data: class : 0 – 10, frequency: 5,  
10 – 20, 3, 20 – 30, 4, 30 – 40, 3, 40 – 50, 3, 50-60 , 4, 60-70 , 7, 70-80 , 9  
, 80-90 , 7, 90-100 , 8,

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2. Find the mean of the following frequency distribution, using step-deviation method:

Class	0-10	10-20	20-30	30-
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40                      40-50 Frequency      7                      12                      13

10                      8



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3. If  $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$ , show that  $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$



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4. Prove that  $(\csc \theta - \sin \theta)(\sec \theta - \cos \theta) = \frac{1}{\tan \theta + \cot \theta}$ .



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5. Let  $A = \{\phi\{\phi\}, 1, \{1, \phi\}, 2\}$ . Determine which of the following is true or false. (a).  $\phi \in A$  (b).  $2 \subset A$  (c).  $\{2, \{1\}\} \subset A$



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6. In Figure,  $AB \perp BC$ ,  $FG \perp BC$  and  $DE \perp AC$ . Prove  $\widehat{ADE} \sim \widehat{GCF}$



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7. Prove that  $\frac{2\sqrt{3}}{5}$  is irrational.



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8. Show that any positive odd integer is of the form  $4q + 1$  or  $4q + 3$ , where  $q$  is some integer.



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9. If  $\alpha, \beta$  are zeroes of the polynomial  $x^2 - 2x - 15$ , then form a quadratic polynomial whose zeroes are  $(2\alpha)$  and  $(2\beta)$ .



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10. A person can row a boat at the rate of 5 km/hour in still water. He takes thrice as much time in going 40 km upstream as in going 40 km downstream. Find the speed of the stream.



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11. Check graphically whether the pair of linear equation  $4x - y - 8 = 0$  and  $2x = 3y - 6 = 0$  is consistent. Also, find the vertices of the triangle formed by these lines with the x-axis.



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12. In Figure,  $AD \perp BC$  and  $BD = \frac{1}{3}CD$ . Prove that  $2CA^2 = 2AB^2 + BC^2$



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13. Find the mode of the following distribution of marks obtained by 80 students:

Marks obtained	0-10	10-20	20-30	30-40	40-50
No. of students	12	32	20	6	10



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14. In Fig. ,  $AD = 4cm$  ,  $BD = 3cm$  and  $CB = 12cm$  , find  $\cot \theta$  . (a)  $\frac{12}{5}$   
 (b)  $\frac{5}{12}$  (c)  $\frac{13}{12}$  (d)  $\frac{12}{13}$  (



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15. The decimal expansion of  $\frac{147}{120}$  will terminate after how many places of decimal? 1 (b) 2 (c) 3 (d) will not terminate



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16. The pair of linear equations  $3x + 2y = 5$ ;  $2x - 3y = 7$  have (a) One solution (b) Two solutions (c) Many solutions (d) No solution



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17. For a given data with 70 observations the less than ogive and the more than ogive intersect at  $(20.5, 35)$ . The median of the data is

(a) 20

(b) 35

(c) 70

(d) 20.5



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18. Can  $(x - 2)$  be the remainder on division of a polynomial  $p(x)$  by  $(2x + 3)$ ? Justify your answer.



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19. In Figure,  $ABCD$  is a rectangle. Find the values of  $x$  and  $y$ .



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20. If  $7 \sin^2 \theta + 3 \cos^2 \theta = 4$ , show that  $\tan \theta = \frac{1}{\sqrt{3}}$



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21. In Figure,  $DE \parallel AC$  and  $DF \parallel AE$ . Prove that  $\frac{EF}{BF} = \frac{EC}{BE}$ .



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22. In Figure, If  $DE \parallel BC$ , then  $x$  equals. (a) 6cm (b) 8cm (c) 10cm (d) 12.5



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23. In Figure, the graph of a polynomial  $p(x)$  is shown. The number of zeroes of  $p(x)$  is (a) 4 (b) 1 (c) 2 (d) 3



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24. If 35 is removed from the data: 30, 34, 35, 36, 37, 38, 39, 40, then the median increases by 2 (b) 1.5 (c) 1 (d) 0.5



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25. If  $u_i = \frac{x_i - 25}{10}$ ,  $\sum f_i u_i = 20$ ,  $\sum f_i = 100$ , then  $x =$  23 (b) 24 (c) 27 (d) 25



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26. The mean of 1, 3, 4, 5, 7, 4 is  $m$ . The number 3, 2, 2, 4, 3, 3,  $p$  have mean  $m - 1$  and median  $q$ . Then,  $p + q =$  4 (b) 5 (c) 6 (d) 7



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27. The mean of  $n$  observations is  $X$ . If the first item is increased by 1, second by 2 and so on, then the new mean is (a)  $X + n$  (b)  $X + \frac{n}{2}$  (c)  $X + \frac{n+1}{2}$  (d) None of these

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28. The arithmetic mean of  $1, 2, 3, \dots, n$  is (a)  $\frac{n+1}{2}$  (b)  $\frac{n-1}{2}$  (c)  $\frac{n}{2}$  (d)  $\frac{n}{2} + 1$

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29. During the medical check-up of 35 students of a class, their weights were recorded as follows: Draw a less than type ogive for the given data. Hence obtain the median weight from the graph and verify the result by using the formula.

Weight (in kg)	No. of students
38-40	3
40-42	2
42-44	4
44-46	5
46-48	14
48-50	4
50-52	3

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30. Given that  $\tan \theta = \frac{1}{\sqrt{3}}$ , the value of  $\frac{\cos \theta - \sec^2 \theta}{\cos \theta + \sec^2 \theta}$  is (a)  $-\frac{1}{2}$  (b)  $\frac{1}{2}$  (c)  $-\frac{1}{2}$  (d)  $-\frac{1}{2}$

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31. If  $\sin 3\theta = \cos(\theta - 6^\circ)$ , where  $3\theta$  and  $(\theta - 6^\circ)$  are both acute angles, then the value of  $\theta$  is (a)  $18^\circ$  (b)  $24^\circ$  (c)  $36^\circ$  (d)  $30^\circ$

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32. For the following grouped frequency distribution find the mode:

Class: 3-6 , 6-9 , 9-12 , 12-15 , 15-18 , 18-21 , 21-24 Frequency: 2 , 5 , 10 , 23 , 21 , 12 , 3

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**33.** Compute the value of mode for the following frequency distribution.

Class:      100-110   110-120   120-130   130-140   140-150   150-160   160-170

Frequency   4                  6                  20                  32                  33                  8                  2



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**34.** Find the value of  $x$ , if the mode of the following data is 25:

15,20,25,18,14,15,25,15,18,16,20,25,20, $x$ ,18



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**35.** Compute the mode for the following frequency distribution:



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**36.** Draw a cumulative frequency curve and cumulative frequency polygon for the following frequency distribution by less than method. Age (in

yrs).	0-9	10-19	20-29	30-39	40-49	50-59	60-69
No. of Person	5	15	20	23	17	11	9

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**37.** Calculate the value of mode for the following frequency distribution:

Class:	1-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33-
26 37-40	Frequency:	2	5	8	9	12	14	14	
15	11	13							

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**38.** Find the median of the following data: CLASS ; 0-10 , 10-20 , 20-30 , 30 – 40, 40 – 50, 50-60 , 60-70 , 70-80 , 80-90 , `90-100 FREQUENCY ; 5 , 3 , 4 , 3 , 3 , 4 , 7 , 9 , 7 , 8

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39. Following is the age distribution of a group of students. Draw the cumulative frequency polygon, cumulative frequency curve (less than type) and hence obtain the median value.



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40. The following observations relate to the height of a group of persons. Draw the two types of cumulative frequency polygons and cumulative frequency curves and determine the median. Height in cms

Frequency	140-143	143-146	146-149	149-152	152-155	155-158	158-161	161-164	164-167	167-170	170-173	173-176	176-179	179-182
	3	9	26	31	45	64	78	85	96	72	60	43	20	6



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41. If the mean of the following distribution is 54, find the value of  $p$ :

Class:	0-20	20-40	40-60	60-80	80-100	Frequency:
	7	$p$	10	9	13	



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42. If  $2 \cos \theta - \sin \theta = x$  and  $\cos \theta - 3 \sin \theta = y$ . Prove that  $2x^2 + y^2 - 2xy = 5$ .



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43. Find the mean marks of the students from the following cumulative frequency distribution:
- | Marks | Below 10 | Below 20 | Below 30 | Below 40 | Below 50 | Below 60 | Below 70 | Below 80 | Below 90 | Below 100 | No. of Students |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------------|
|       | 5        | 9        | 17       | 29       | 45       | 60       | 70       | 78       | 83       | 85        |                 |



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44. Find the mean marks of students from the following cumulative frequency distribution:
- | Marks        | No. of Students |
|--------------|-----------------|
| 0 and above  |                 |
| 10 and above |                 |
| 20 and above |                 |
| 30 and above |                 |
| 40 and above |                 |
| 50 and above |                 |
| 60 and above |                 |
| 70 and above |                 |

above, 80 and above, 90 and above, 100 and above, 80, 77, 72, 65, 55, 43, 28, 16, 10, 8, 0



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45. The number of students absent in a school was recorded every day for 147 days and the raw data was presented in the form of the following frequency table.

No. of Student absent:	5	6	7	8	9	10
11	12	13	15	18	20	10
No. of days	1	5	11	14	16	13

10 70 4 1 1 1 Obtain the median and describe what information it conveys.



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46. Classes: 25-29 30-34 35-39 40-44 45-49 50-54 55-59

Frequency:	14	22	16	6	5	3	4
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Find the mean for given data.



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47. Compute the median from the following data: Mid-value: 115

125	135	145	155	165	175	185	195
Frequency:	6	25	48	72	116	60	38
22	3						

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48. Find the median of the following frequency distribution: Weekly wages (in Rs.)

60-69	70-79	80-89	90-99	100-109
No. of days:	5	15	20	30
20	8			

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49. If the median of the following frequency distribution is 46, find the missing frequencies. Variable:

10-20	20-30	30-40	40-50	50-
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60	60-70		70-80	Total Frequency:	12	30
?	65	?	25	18	230	

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50. Calculate the median from the following data:

Marks:	0-10	10-30	30-60	60-80	80-90`
No. of Students	5	15	30	8	2

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51. Find the mode of the following data:

25,16,19,48,19,20,34,15,19,20,21,24,19,16,22,16,18,20,16,19

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52. Compute the median for the following cumulative frequency distribution:

less than 20	Less than 30	4	Less than 40	16	Less than 50
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30 Less than 60 46 Less than 70 66 Less than 80 82 Less than 90 92  
Less than 100 100



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53. In Figure,  $ABC$  is right angled at  $B$ ,  $BC = 7cm$  and  $AC - AB = 1cm$ . Find the value of  $\cos A - \sin A$ .



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54. In Figure,  $P$  and  $Q$  are the midpoints of the sides  $CA$  and  $CB$  respectively of  $ABC$  right angled at  $C$ . Prove that  $4(AQ^2 + BP^2) = 5AB^2$ .



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55. The diagonals of a trapezium  $ABCD$  with  $AB \parallel DC$  intersect each other at point  $O$ . If  $AB = 2CD$ , find the ratio of the areas of triangle  $AOB$  and  $COD$ .

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56. The mean of the following frequency distribution is 50. Find the value of  $p$ .

Classes	0-20	20-40	40-60	60-80	80-100
Frequency	17	28	32	$p$	19

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57. If  $\sec 4A = \operatorname{cosec}(A - 20^\circ)$ , where  $4A$  is an acute angle, find the value of  $A$ .

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58. In Figure  $PQ \parallel CD$  and  $PR \parallel CB$ . Prove  $\frac{AQ}{QD} = \frac{AR}{RB}$ .

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**59.** In Figure, two triangles  $ABC$  and  $DBC$  are on the same base  $BC$  in which  $\angle A = \angle D = 90^\circ$ . If  $CA$  and  $BD$  meet each other at  $E$ , show that  $AExCE = BExDE$ .



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**60.** Find the mode of the following data:

Class	Frequency
0-20	15
20-40	6
40-60	18
60-80	10



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**61.** Prove that in a triangle if the square of one side is equal to the sum of the squares of the other two side then the angle opposite to the first side is a right angle.



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**62.** If a line is drawn to one side of a triangle to intersect the other two sides in distinct points, prove that the other two sides are divided in the same ratio.



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**63.** Prove that:  $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \csc \theta$



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**64.** Without using trigonometric tables, evaluate the following:

$$\frac{\sec 37^\circ}{\csc 53^\circ} + 2\cot 15^\circ \cot 25^\circ \cot 45^\circ \cot 75^\circ \cot 65^\circ (\sin^2 18^\circ + \sin^2 72^\circ)$$



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**65.** Find the mode of the following distribution of marks obtained by 80 students:

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

10

12

32

20



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**66.** Divide  $30x^4 + 11x^3 - 82x^2 - 12x + 48$  by  $(3x^2 + 2x - 4)$  and verify the result by division algorithm.



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**67.** For what value of  $k$  will the following system of linear equations have infinite number of solution :-  $2x + 3y = 2$  ,  $(k + 2)x + (2k + 1)y = 2(k - 1)$



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**68.** Draw a cumulative frequency curve and cumulative frequency polygon for the following frequency distribution by less than method. Age (in yrs).

0-9 10-19 20-29 30-39 40-49 50-59 60-69 No. of Person 5 15 20 23 17 11 9



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69. The following table gives weekly wages in rupees of workers in a certain commercial organization. The frequency of class 49-52 is missing. It is known that the mean of the frequency distribution is 47.2. Find the missing frequency.

Weekly wages (Rs.)		40-43		43-46		46-49		49-52		52-55		No. of workers:	
58	60	?	27										31

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70. The mean of the following frequency table is 50. But the frequencies  $f_1$  and  $f_2$  in class 20 – 40 and 60 – 80 are missing. Find the missing frequencies.

Class	0-20	20-40	40-60	60-80	80-100	Total
Frequency	17	$f_1$	32	$f_2$	19	120

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71. Find the mean of the following frequency distribution:

Classes:	0-20	20-40	40-60	60-
80	80-100	Frequency:	15	18
21	29	17		



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72. The following table gives the distribution of total household expenditure (in rupees) of manual workers in a city. Expenditure: (in

Rs.)	100-150	150-200	200-250	250-	
300	300-350	350-400	400-450	450-500	
Frequency:	24	40	33	28	30

22 16 7 Find the average expenditure (in Rs.) per household.



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73. A frequency distribution of the life times of 400 T.V. picture tubes tested in a tube company is given below. Find the average life of tube. Life



Time (in hrs)	Frequency					Life time (in
hrs)	Frequency 300-399 400-499 500-599 600-699 700-					
799	14	46	58	76	68	800-899 900-999 1000-1099 1100-1199 62 48 22 6

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74. If the mean of the following distributions 54, find the value of  $p$ :  
Class: 0-20 20-40 40-60 60-80 80-100 Frequency: 7  $p$  10 9 13

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75. Apply step-deviation method to find the  $AM$  of the following frequency distribution  
Variate( $x$ ) 5 10 15 20 25 30 35 40 45 50  
Frequency( $f$ ) 20 43 75 67 72 45 39 9 8 6

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76. The weights in kilograms of 60 workers in a factory are given in the following frequency table. Find the mean weight of a worker. Weight (in kg) x: 60 61 62 63 64 65 No. of workers f: 5 8 14 16 10 7



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77. The table below gives the distribution of villages under different heights from sea level in a certain region. Compute the mean height of the region:

Height (in metres)	200	600	1000	1400
No. of village:	1800	2200	1400	560
	271	89	16	



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78. Find the mean of the following frequency distribution: Class-interval:

0-10	10-20	20-30	30-40	40-50
No. of workers f:	7	10	15	8
	10			

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79. In an isosceles triangle  $ABC$  with  $AB = AC$  and  $BD \perp AC$ . Prove that  $BD^2 - CD^2 = 2CD \cdot AD$ .

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80. If the pair of linear equations  $(3k + 1)x + 3y - 2 = 0$  and  $(k^2 + 1)x + (k - 2)y - 5 = 0$  inconsistent, The value of  $k$  is

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81. Draw the graphs of following equations:  $2x - y = 1$  and  $x + 2y = 13$  find the solution of the equations from the graph. shade the triangular region formed by the lines .

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**82.** The following table gives the production yield per hectare of wheat of 100 farms of a village. Change the given distribution to more than type distribution and draw its ogive



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**83.**

Evaluate:

$$\frac{\sec \theta \operatorname{cosec}(90^{\circ} - \theta) - \tan \theta \cot(90^{\circ} - \theta) + \sin^2 55^{\circ} + \sin^2 35^{\circ}}{\tan 10^{\circ} \tan 20^{\circ} \tan 60^{\circ} \tan 70^{\circ} \tan 80^{\circ}}$$



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**84.** If  $\sec \theta + \tan \theta = p$ , prove that  $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$



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**85.** Prove that in a triangle, if the square of one side is equal to the sum of the squares of the other two sides, then the angles opposite to the

first side is a right angle.



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86. Prove that :  $\frac{\sec \theta + \tan \theta - 1}{\tan \theta - \sec \theta + 1} = \frac{\cos \theta}{1 - \sin \theta}$



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87. Find all zeros of the polynomial  $2x^4 + 7x^3 - 19x^2 - 14x + 30$ , if two of its zeros are  $\sqrt{2}$  and  $-\sqrt{2}$ .



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88. Prove that the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding medians.



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89. What is the value of the median of the data using the graph in the following figure of less than ogive and more than ogive? (FIGURE)



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90.  $ABC$  and  $PQR$  are similar triangles such that  $\angle A = 32^\circ$  and  $\angle R = 65^\circ$ .

Then,  $\angle Q$  is  $83^\circ$  (b)  $32^\circ$  (c)  $65^\circ$  (d)  $97^\circ$



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91. The value of  $p$  for which the polynomial  $x^2 + 4x^2 - px + 8$  is exactly divisible by  $(x - 2)$  is 0 (b) 3 (c) 5 (d) 16



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92. Which of the following real numbers when simplified are either terminating or rerepeating decimal ?

$$(A)\sin\left(\frac{3\pi}{8}\right)\cos\left(\frac{3\pi}{8}\right)(B)\log_2(112)(C)\log_3 2\log_4 3\log_8 4(D)27^{-\log_{25}(5)}$$



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93. The value of  $[(\sec A + \tan A)(1 - \sin A)]$  is equal to (a)  $\tan^2 A$  (b)  $\sin^2 A$  (c)  $\cos A$  (d)  $\sin A$



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94. If  $\sin A + \sin^2 A = 1$ , then the value of  $\cos^2 A + \cos^4 A$  is (a) 2 (b) 1 (c) -2 (d) 0



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95. The value of  $k$  for which the pair of linear equation  $4x + 6y - 1 = 0$  and  $2x + ky - 7 = 0$  represent parallel lines is (a)  $k = 3$  (b)  $k = 2$  (c)  $k = 4$  (d)  $k = -2$



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96. The  $[HCF \cdot LCM]$  for the numbers 50 and 20 is 10 (b) 100 (c) 1000  
(d) 50



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97. In Figure,  $ABCD$  is a parallelogram. Find the values of  $x$  and  $y$ .



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98. Find the quadratic polynomial with zeroes  $3 + \sqrt{2}$  and  $3 - \sqrt{2}$



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99. Find the mean wage from the following data: Wage (in Rs.: 800820  
860900920 9801000 No. of workers: 7 14 19 25 20 10 5 By short cut  
method



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**100.** Find the mean wage from the data given below: Wage (in Rs)

800	820	860	900	920	980	1000	No. of
workers:	7	14	19	25	20	10	5

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**101.** Find the mean of the following distribution: x: 10

30	50	70	89	f:	7	8
10	15	10				

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**102.** Following table shows the weight of 12 students: Weight (in

kgs)	67	70	72
73		75	Number of Students: 4

### 1 Find the mean

weight of the students.



**103.** Find the mean of the following distribution: x: 4

6                      9                      10                      15 f:                      5                      10

10                      7                      8



104. Following table shows the weights of 12 students: Weight (in kgs): 67

70 72 73 75 No. of Students: 4 3 2 2 1 Find the mean weight.



**105.** Find the missing frequencies in the following frequency distribution

if it is known that the mean of the distribution is 1.46. No. of accident

(x), 0, 1, 2, 3, 4, 5, Total Frequency is 200 and no. of days

(f): 46, ?, ?, 25, 10, 5



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**106.** Find the value of  $p$ , the mean of the following distribution is 7.5

$x$ : 7 9 11 13  $f$ : 6 8 15  $p$  8 4



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**107.** If the mean of the following distribution is 6, find the value of  $p$

$x$ : 2 4 6 10  $p + 5$

$f$ : 3 2 3 1 2



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**108.** Calculate the mean for the following distribution:  $x$ : 5 6 7 8 9  $f$ : 4 8

14 11 3



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**109.** Find the mean of the following data:  $x : 19\ 21\ 23\ 25\ 27\ 29\ 31$   $f : 13\ 15$   
 $16\ 18\ 16\ 15\ 13$



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**110.** If the mean of the following data is 20.6. Find the value of  $p$ .  $x : 10\ 15$   
 $p\ 25\ 35$   $f : 3\ 10\ 25\ 7\ 5$



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**111.** If the mean of the following data is 15, find  $p$ .  $x : 5\ 10\ 15\ 20\ 25$   $f : 6\ p\ 6$   
 $10\ 5$



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**112.** Find the value of  $p$  for the following distribution whose mean is 16.6.

$x$ : 8, 12, 15,  $p$ , 20, 25, 30 and  $f$ : 12, 16, 20, 24, 16, 8, 4



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**113.** Find the value of  $p$  for the following distribution whose mean is 12.58.

$x$ : 5, 8, 10, 12,  $p$ , 20, 25 and  $f$ : 2, 5, 8, 22, 7, 4, 2



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**114.** Find the value of  $p$ , the mean of the following distribution is 7.5  $x$ : 3 5

7 9 11 13  $f$ : 6 8 15  $p$  8 4



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**115.** Find the value of  $p$ , if the mean of the following distribution is 20.

$x$ : 15, 17, 19,  $20+p$ , 23 and  $f$ : 2, 3, 4,  $5p$ , 6

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**116.** The following table gives the number of boys of a particular age in a class of 40 students. Calculate the mean age of the students

Age (in years):	15	16	17	18	19	20	No. of students:
	8	10	10	5	4		3

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**117.** Candidates of four schools appear in a mathematics test. The data were as follows:

Schools	No. of Candidates	Average Score
I	60	75
II	48	80
III	Not available	55
IV	40	50

If the average score of the candidates of all the four schools is 66, find the number of candidates that appeared from school III.

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**118.** Five coins were simultaneously tossed 1000 times and at each toss the number of heads were observed. The number of tosses during which 0, 1, 2, 3, 4 and 5 heads were obtained are shown in the table below. Find the mean number of heads per toss.

No. of heads per toss	No. of tosses
0	38
1	144
2	342
3	287
4	16
5	25
Total	1000

No. of heads per toss	No. of tosses
0	38
1	144
2	342
3	287
4	16
5	25
Total	1000


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**119.** Find the missing frequencies in the following frequency distribution if it is known that the mean of the distribution is 50.

$x$	$f$
10	17
30	$f_1$
50	32
70	$f_2$
90	19
Total	120


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**120.** The arithmetic mean of the following data is 14. Find the value of  $k$  .  $x_i$

$: 5 \ 10 \ 15 \ 20 \ 25 \ f_i : 7 \ k \ 8 \ 4 \ 5$



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**121.** The arithmetic mean of the following data is 25, find the value of  $k$  .

$x_i : 5 \ 15 \ 25 \ 35 \ 45 \ f_i : 3 \ k \ 3 \ 6 \ 2$



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**122.** If the mean of the following data is 18.75. Find the value of  $p$  .  $x_i : 10$

$15 \ p \ 25 \ 30 \ f_i : 5 \ 10 \ 7 \ 8 \ 2$



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**123.** The number of telephone calls received at an exchange per interval for 250 successive one-minute intervals are given in the following



frequency table: No. of calls ( $x$ ) : 9 1 2 3 4 5 6 No. of intervals ( $f$ ) : 15 24  
29 46 54 43 39 Compute the mean number of calls per interval.

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**124.** Five coins were simultaneously tossed 1000 times, and at each toss the number of heads was observed. The number of tosses during which 0, 1, 2, 3, 4 and 5 heads were obtained are shown in the table below. Find the mean number of heads per toss

No. of heads	per toss
0	38
1	144
2	342
3	287
4	164
5	25

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**125.** The following table gives the number of branches and number of plants in the garden of a school. No. of branches ( $x$ ) : 2 3 4 5 6 No. of plants ( $f$ ) : 49 43 57 38 13 Calculate the average number of branches per plant.

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**126.** The following table gives the number of children of 150 families in a village

No. of children ( $x$ ) :	0	1	2	3	4	5
No. of families ( $f$ ) :	10	21	55	42	15	7

Find the average number of children per family.

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**127.** The marks obtained out of 50, by 102 students in a Physics test are given in the frequency table below:

Marks ( $x$ ) :	15	20	22	24	25	30	33	38	45
Frequency ( $f$ ) :	5	8	11	20	23	18	13	3	1

Find the average number of marks.

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**128.** The number of students absent in a class were recorded every day for 120 days and the information is given in the following frequency table:

No. of students absent ( $x$ ) :	0	1	2	3	4	5	6	7
No. of days ( $f$ ) :	1	4	10	50	34	15	4	2

Find the mean number of students absent per day.

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**129.** In the first proof reading of a book containing 300 pages the following distribution of misprints was obtained: No. of misprints per page ( $x$ ) : 0 1 2 3 4 5 No. of pages ( $f$ ) : 154 95 36 9 5 1 Find the average number of misprints per page.

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**130.** The following distribution gives the number of accidents met by 160 workers in a factory during a month. No. of accidents ( $x$ ) : 0 1 2 3 4 No. of workers ( $f$ ) : 70 52 34 3 1 Find the average number of accidents per worker.

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**131.** Find the mean from the following frequency distribution of marks at a test in statistics: Marks ( $x$ ) : 5 10 15 20 25 30 35 40 45 50 No. of

students ( $f$ ) : 15 50 80 76 72 45 39 9 8 6



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**132.** The following table gives the distribution of total household expenditure (in rupees) of manual workers in a city. Expenditure (in rupees) ( $x_i$ ) Frequency ( $f_i$ )

100-150	24
150-200	40
200-250	33
250-300	28
300-350	30
350-450	22
400-450	16
450-500	7

Find the average expenditure (in rupees) per household.



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**133.** A survey was conducted by a group of students as a part of their environment awareness programme , in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house.

Number of plants:	0-2	2-4	4-6	6-8	8-10	10-12	12-14
Number of houses:	1	2	1	5	6	2	3

Which method did you use for finding the mean, and why?

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**134.** Consider the following distribution of daily wages of 50 workers of a factory. Daily wages (in Rs):

Daily wages (in Rs)	100-120	120-140	140-160	160-180	180-200
Number of workers	12	14	8	6	10

Find the mean daily wages of the workers of the factory by using an appropriate method.

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

Heart beats (per min.)	65-68	68-71	71-74	74-77	77-80	80-83	83-86
No. of women	2	4	3	8	7	4	2

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**136.** Find the mean of the following frequency distributions: Class interval: 0-6   6-12   12-18   18-24   24-30 Frequency: 6   8   10   9   7



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**137.** Find the mean of the following frequency distributions: Class: 50-70   70-90   90-110   110-130   130-150   150-170 interval Frequency: 18   12   13   27   8   22



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**138.** Find the mean of the following frequency distributions: Class interval: 0-8   8-16   16-24   24-32   32-40 Frequency: 6   7   10   8   9



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**139.** Find the mean of the following frequency distributions: Class

interval:    0-6            6-12            12-18            18-24            24-30    Frequency:

7            5            10            12            6



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**140.** Find the mean of the following frequency distributions: Class

interval:    0-10    10-20    20-30    30-40    40-50    Frequency:            9

12            15            10            14



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**141.** Find the mean of the following frequency distributions:

*Class interval:*    0 – 8    8 – 16    16 – 24    24 – 32    32 – 40

*Frequency:*            5            9            10            8            8



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**142.** Find the mean of the following frequency distributions:

*Class interval:* 0 – 8   8 – 16   16 – 24   24 – 32   32 – 40

*Frequency:*      5      6      4      3      2



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**143.** Find the mean of the following frequency distributions:

*Class interval:* 10 – 30   30 – 50   50 – 70   70 – 90   90 – 110   110 – 130

*Frequency:*      5      8      12      20      3      2



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**144.** Find the mean of the following frequency distributions: Class

interval: 25-35   35-45   45-55   55-65   65-75   Frequency:      6

10      8      12      4



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**145.** For the following distribution, calculate the mean using all suitable methods: Size of item:    1-4    4-9    9-16    16-27 Frequency:    6  
12    26    20


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**146.** The weekly observations on cost of living index in a certain city for the year 2004-2005 are given below. Compute the weekly cost of living index.

Cost of living index	Number of students
1400-1500	5
1500-1600	10
1600-1700	20
1700-1800	9
1800-1900	6
1900-2000	2


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**147.** The following table shows the marks scored by 140 students in an examination of a certain paper:

Marks:	0-10	10-20	20-30	30-40	40-50
No. of students:	20	24	40	36	20

Calculate the average marks by using the assumed mean deviation method.

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**148.** The mean of the following frequency distribution is 62.8 and the sum of all the frequencies is 50. Compute the missing frequency  $f_1$  and  $f_2$  .  
Class: 0-20 20-40 40-60 60-80 80-100 100-120 Frequency: 5  $f_1$  10  $f_2$  7 8

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**149.** The following distribution shows the daily pocket allowance given to the children of a multistorey building. The average pocket allowance is Rs 18.00. Find out the missing frequency:

Class	11-13	13-15	15-17	17-19
19-21	7	6	9	13
21-23	5	4		
23-25				

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**150.** If the mean of the following distribution is 27, find the value of  $p$ .

Class: 0-10 10-20 20-30 30-40 40-50 Frequency: 8  $p$  12 13 10



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**151.** In a retail market, fruit vendors were selling mangoes kept in packing boxes. These boxes contained varying number of mangoes. The following was the distribution of mangoes according to the number of boxes. No.

of mangoes: 50-52 53-55 56-58 59-61 62-64 No. of boxes:

15 110 135 115 25 Find the mean number of mangoes kept in a packing box. Which method of finding the mean did you choose?



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**152.** The table below shows the daily expenditure on food of 25 households in a locality. daily expenditure(in rs) 100-150 150-200 200-250 250-300 300-350 no. of households 4 5 12 2 2 Find the mean daily expenditure on food by a suitable method.

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**153.** To find out the concentrations of  $SO_2$  in the air (in parts per million, i.e., ppm), the data was collected for 30 localities in a certain city and is presented below:

Concentration of $SO_2$ (in ppm)	Frequency
0.00 - 0.04	4
0.04 - 0.08	9
0.08 - 0.12	9
0.12 - 0.16	2
0.16 - 0.20	4
0.20 - 0.24	2

Find the mean concentration of  $SO_2$  in the air.

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**154.** A class teacher has the following absentee record of 40 students of a class for the whole term. Find the mean number of days a student was absent.

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**155.** The following table gives the literacy rate (in percentage) of 35 cities. Find the mean literacy rate.

Literacy rate (in %)
45-55
55-65
65-75
75-

85   85-95   Number of cities:                      3                      10                      11                      8                      3



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**156.** The following are the marks of 9 students in a class. Find the median: 34, 32, 48, 38, 24, 30, 27, 21, 35



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**157.** Find the median of the daily wages of ten workers from the following data: Rs 20, 25, 17, 18, 8, 15, 22, 11, 9, 14.



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**158.** Obtain the median for the following frequency distribution:  $x : 1 \ 2 \ 3 \ 4$   
 $5 \ 6 \ 7 \ 8 \ 9 \ f : 8 \ 10 \ 11 \ 16 \ 20 \ 25 \ 15 \ 9 \ 6$



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159. Calculate the median from the following distribution: Class: 5-10  
 10-15 15-20 20-25 25-30 30-35 35-40 40-45 Frequency: 5 6  
 15 10 5 4 2 2

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160. The median of the following data is 525. Find the values of  $x$  and  $y$  , if  
 the total frequency is 100.

Class interval	0 – 100	100 – 200	200 – 300	300 – 400	400 – 500	500 – 600	600 – 700	700 – 800	800 – 900	900 – 1000																		
Frequency	0	100	2	100	200	5	200	300	$x$	300	400	12	400	500	17	500	600	20	$y$	700	800	9	800	900	7	900	1000	4

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161. If the median of the distribution given below is 28.5, find the value of  
 $x$  and  $y$  . Class interval: 0-10 10-20 20-30 30-40 40-50 50-60 No. of  
 students: 5  $x$  20 15  $y$  5

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**162.** Following are the lives in hours of 15 pieces of the components of aircraft engine. Find the median: 715, 724, 725, 710, 729, 745, 694, 699, 696, 712, 734, 728, 716, 705, 719



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**163.** The following is the distribution of height of students of a certain class in a certain city:

Height (in cms)	160 – 162	163 – 165	166 – 168	169 – 171	172 – 174
No. of students	15	118	142	127	18

Find the median height.



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**164.** Following is the distribution of I.Q. of 100 students. Find the median

I.Q.	55-64	65-74	75-84	85-94	95-104	105-114	115-124	125-134	135-144
No. of Students:	1	2	9	22	33	22	8	2	1

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**165.** Calculate the median from the following data: Rent (in Rs.): 15-  
 25 25-35 35-45 45-55 55-65 65-75 75-85 85-95 No. of Houses: 8  
 10 15 25 40 20 15 7

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**166.** Calculate the median from the following data: Marks below: 10  
 20 30 40 50 60 70 80 No. of students: 15 35 60 84 96  
 127 198 250

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**167.** An incomplete distribution is given as follows: Variable: 0-10 10-  
 20 20-30 30-40 40-50 50-60 60-70 Frequency: 10 20 ?  
 40 ? 25 15 You are given that the median value is 35 and the



sum of all the frequencies is 170. Using the median formula, fill up the missing frequencies.

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168. Calculate the missing frequency from the following distribution, it being given that the median of the distribution of 24. Age in years:      0-10      10-20      20-30      30-40      40-50 No. of persons:      5      25      ?      18      7

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169. Find the missing frequencies in the following frequency distribution if it is known that the mean of the distribution is 1.46. No of accident (x)  
0 1 2 3 4 5 Total Frequency (f): 46 ? ? 25 10 5 200

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**170.** An incomplete distribution is given below: Variable: 10-20 20-30 30-40 40-50 50-60 60-70 70-80 Frequency: 12 30 - 65 - 25 18 You are given that the median value is 46 and the total number of items is 230. (i) Using the median formula fill up missing frequencies. (ii) Calculate the  $AM$  of the completed distribution.


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**171.** The following table gives the frequency distribution of married women by age at marriage:

Age (in years)	Frequency	Age (in years)	Frequency
15-19	53	40-44	9
20-24	140	45-49	5
25-29	98	50-54	3
30-34	59	55-59	3
35-39	12	60 and above	2

Calculate the median and interpret the results


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**172.** If the median of the following frequency distribution is 28.5 find the missing frequencies: Class interval: 0-10 10-20 20-30 30-40 40-50 50-60  
 Total Frequency: 5  $f_1$  20 15  $f_2$  5 60


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**173.** The median of the following data is 525. Find the missing frequency, if it is given that there are 100 observations in the data: Class interval  
 Frequency Class interval Frequency 0 100 2 500 600 20 100 200 5 600 700  
 $f_2$  200 300  $f_1$  700 800 9 300 400 12 800 900 7 400 500 17 900 1000 4


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**174.** If the median of the following data is 32.5, find the missing frequencies. Class interval: 0-10 10-20 20-30 30-40 40-50 50-60 60-70 Total  
 Frequency:  $f_1$  5 9 12  $f_2$  3 2 40


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175. Compute the median for each of the following data: (i) Marks

No. of students	(ii) Marks	No. of students	Less than 10
0	More than 150	0	Less than 30
10	More than 140	12	Less than 50
25	More than 130	27	Less than 70
43	More than 120	60	Less than 90
65	More than 110	105	Less than 110
87	More than 100	124	Less than 130
96	More than 90	141	Less than 150
100	More than 80	150	



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176. A survey regarding the height (in cm) of 51 girls of class  $X$  of a school was conducted and the following data was obtained: Height (in cm)

Less than 140	Less than 145	Less than 150	Less than 155	Less than 160	Less than 165
4	7	18	11	6	5

Find the median height.



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177. A life insurance agent found the following data for distribution of ages of 100 policy holders. Calculate the median age, if policies are only given to persons having age 18 years onwards but less than 60 years.

Age(in years)		Number of policy holders	
Below 20	2	Below 25	6
Below 30	24	Below 35	45
Below 40	78	Below 45	89
Below 50	92	Below 55	100


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178. The lengths of 40 leaves of a plant are measured correct to the nearest millimetre, and the data obtained is represented in the following table:

Length (mm):	118-126	127-135	136-144	145-153	154-162	163-171	172-180
No. of leaves:	3	5	9	12	5	4	2

Find the mean length of leaf.


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**179.** The following table gives the distribution of the life time of 400 neon lamps:

Lite time: (in hours)	Number of lamps	
1500 – 2000	14	2000-2500
2000 – 2500	56	2500-3000
2500 – 3000	60	3000-3500
3000 – 3500	74	3500-4000
3500 – 4000	62	4000-4500
4000 – 4500	48	4500-5000

Find the median life.



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**180.** The distribution below gives the weight of 30 students in a class.

Weight (in kg):	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of students:	2	3	8	6	3	2	



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**181.** Find the mode of the following data: 120, 110, 130, 110, 120, 140, 130, 120, 140, 120

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**182.** Compute the modal value for the following frequency distribution:  $x$   
: 95 105 115 125 135 145 155 165 175  $y$ : 4 2 18 22 21 19 10 3 2

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**183.** The following data gives the distribution of total household expenditure (in rupees) of manual workers in a city: Expenditure (Rs.)

Frequency	Expenditure ( Rs.)	Frequency	1000-1500	24	
3000-3500	30	1500-2000	40	3500-	
4000	22	2000-2500	33	4000-4500	16
2500-3000	28	4500-5000	7	Find the average	

expenditure which is being done by the maximum number of manual workers.

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**184.** The following table shows the age distribution of cases of a certain disease admitted during a year in a particular hospital. Age (in years):

5-14	15-24	25-34	35-44	45-54	55-64	No. of cases:	6	11
21	23	14						

5. Find the average age for which maximum cases occurred.

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**185.** Find the mode of the following data: (i) 3, 5, 7, 4, 5, 3, 5, 6, 8, 9, 5, 3, 5, 3, 6, 9, 7, 4 (ii) 3, 3, 7, 4, 5, 3, 5, 6, 8, 9, 5, 3, 5, 3, 6, 9, 7, 4 (iii) 15, 8, 26, 25, 24, 15, 18, 20, 24, 15, 19, 15

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**186.** The shirt sizes worn by a group of 200 persons, who bought the shirt from a store, are as follows: Shirt size:

37	38	39	40	41	42					
43	44	No. of persons:	15	25	39	41	36	17	15	12.

Find the modal shirt size worn by the group.

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**187.** Find the mode of the following distribution: (i) Class-interval: 0-10

10-20	20-30	30-40	40-50	50-60	60-70	70-80	Frequency:	5
8	7	12	28	20	10	10		

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**188.** Compare the modal ages of two groups of students appearing for an

entrance test: Age (in years): 16-18 18-20 20-22 22-24 24-26 Group

A: 50 78 46 28 23 Group B: 54 89 40 25 17

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**189.** The marks in science of 80 students of class  $X$  are given below: Find

the mode of the marks obtained by the students in science. Marks: 0-10

10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100 Frequency: 3 5 16

12 13 20 5 4 1 1

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**190.** The following is the distribution of height of students of a certain class in a certain city: Height (in cms): 160-162    163-165    166-168    169-171  
172-174 No. of students:    15            118            142            127            18. Find the average height of maximum number of students.

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**191.** The following table shows the ages of the patients admitted in a hospital during a year: Age (in years):    5-15    15-25    25-35    35-45    45-55  
55-65 No. of students:    6            11            21            23            14            5 Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency.

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**192.** The following data gives the information on the observed lifetimes (in hours) of 225 electrical components: Lifetimes (in hours):

0-20	20-40	40-60	60-80	80-100	100-120	No. of components:	10	35	52
61	38	29							

Determine the modal lifetimes of the components.



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**193.** The following data gives the distribution of total monthly household expenditure of 200 families of a village. Find the modal monthly expenditure of the families. Also, find the mean monthly expenditure:

Expenditure (Rs.)	Frequency	Expenditure (Rs.)	Frequency
1000-1500	24	3000-3500	30
1500-2000	40	2000-2500	33
2000-2500	33	2500-3000	28
2500-3000	16	3000-3500	22
3000-3500	22	3500-4000	10
3500-4000	10	4000-4500	7
4000-4500	7	4500-5000	4



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**194.** The following distribution gives the state-wise teacher-student ratio in higher secondary schools of India. Find the mode and mean of this data. Interpret, the two measures: Number of students per Teacher

Number of States/U.T. 15-20		3	20-	
25	8	25-30	9	30-
35	10	35-40	3	40-
45	0	45-50	0	50-
55	2			


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**195.** The given distribution shows the number of runs scored by some top batsmen of the world in one-day international cricket matches. Runs scored    3000-4000    4000-5000    5000-6000    6000-7000    7000-8000    8000-9000    9000-10000    10000-11000    No. of batsmen    4    18    9    7    6    3    1

1.Find the mode of the data.


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**196.** A student noted the number of cars passing through a spot on a road for 100 periods each of 3 minutes and summarised it in the table given below. Find the mode of the data:

Number of cars:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency:	7	14	13	12	20	11	15	8



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**197.** The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the median, mean and mode of the data and compare them.

Monthly consumption:	65-85	85-105	105-125	125-145	145-165	165-185	185-205
No. of consumers:	4	5	13	20	14	8	4



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**198.** 100 surnames were randomly picked up from a local telephone directory and the frequency distribution of the number of letters in the

English alphabets in the surnames was obtained as follows: Number of letters: 1-4    4-7    7-10    10-13    13-16    16-19 Number surnames    6  
30        40        16        4        4 Determine the median number of letters in the surnames. Find the mean number of letters in the surnames. Also, find the modal size of the surnames.



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199. Find the mean, median and mode of the following data: Classes: 0-20    20-40    40-60    60-80    80-100    100-120    120-140 Frequency: 6  
8        10        12        6        5        3



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200. Find the median of the following data: Classes: 0-50    50-100    100-150    150-200    200-250    250-300    300-350 Frequency: 2        3        5  
6        5        3        1



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**201.** The following table gives the daily income of 50 workers of a factory:

Daily income (in Rs):	100-120	120-140	140-160	160-180	180-200	Number of workers:
	12	14	8	6	10	

Find the mean, mode and median of the above data.

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**202.** Draw an ogive by less than method for the following data:

No. of rooms:	1	2	3	4	5	6	7	8	9	10	No. of houses:	4	9
	22	28	24	12	8	6	5	2					

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**203.** The marks scored by 750 students in an examination are given in the form of a frequency distribution table:

Marks	No. of students
600-640	16
640-680	45
680-720	59
720-760	76
760-800	80
800-840	59
840-880	45
880-920	25
920-960	10

18 720-760

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**206.** The following table gives the height of trees:

Height	No. of trees Less than	
7	26 Less than 14	57 Less than
21	92 Less than 28	134 Less than
35	216 Less than 42	287 Less than
49	341 Less than 56	360 Draw 'less

than' ogive and 'more than' ogive.



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**207.** The following distribution gives the daily income of 50 workers of a factory: Daily income (in Rs): 100-120 120-140 140-160 160-180 180-200

Number of workers: 12 14 8 6 10 Convert

the above distribution to a less than type cumulative frequency distribution and draw its ogive.



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**208.** The following table gives production yield per hectare of wheat of 100 farms of a village:

Production yield in kg per hectare	50-55	55-60	60-65	65-70	70-75	75-80
No. of farms	2	8	12	24	38	16

Draw 'less than' ogive and 'more than' ogive.



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**209.** Define mean.



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**210.** What is the algebraic sum of deviations of a frequency distribution about its mean?



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**211.** Which measure of central tendency is given by the  $x$  -coordinate of the point of intersection of the more than ogive and less than ogive?



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**212.** In Figure, the value of the median of the data using the graph of less than ogive and more than ogive is 5 (b) 40 (c) 80 (d) 15



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**213.** Write the empirical relation between mean, mode and median.



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**214.** Which measure of central tendency can be determined graphically



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**215.** Write the modal class for the following frequency distribution: Class-interval: 10-15 15-20 20-25 25-30 30-35 35-40 Frequency: 30 35 75 40 30 15



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**216.** A student draws a cumulative frequency curve for the marks obtained by 40 students of a class as shown below. Find the median marks obtained by the students of the class. (FIGURE)



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**217.** Write the median class for the following frequency distribution: Class-interval: 0-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 Frequency: 5 8 7 12 28 20 10 10



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**218.** In the graphical representation of a frequency distribution, if the distance between mode and mean is  $k$  times the distance between median and mean, then write the value of  $k$ .



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



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**220.** Write the median class of the following distribution: Classes: 0-10 10-20 20-30 30-40 40-50 50-60 60-70 Frequency: 4 4 8 10 12 8 4



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**221.** Which of the following is not a measure of central tendency? (a) Mean (b) Median (c) Mode (d) Standard deviation



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**222.** Prove that "The Algebraic Sum of deviations from Mean is zero".



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**223.** For a frequency distribution, mean, median and mode are connected by the relation (a)  $\text{Mode} = 3 \text{ Mean} - 2 \text{ median}$  (b)  $\text{Mode} = 2 \text{ Median} - 3 \text{ Mean}$  (c)  $\text{Mode} = 3 \text{ Median} - 2 \text{ Mean}$  (d)  $\text{Mode} = 3 \text{ Median} + 2 \text{ Mean}$



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**224.** Which of the following cannot be determined graphically? (a) Mean (b) Median (c) Mode (d) None of these



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**225.** The median of a given frequency distribution is found graphically with the help of (a) Histogram (b) Frequency curve (c) Frequency polygon (d) Ogive



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**226.** The mode of a frequency distribution can be determined graphically from (a) Histogram (b) Frequency polygon (c) Ogive (d) Frequency curve



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**227.** Mode is (a) least frequent value (b) middle most value (c) most frequent value (d) None of these



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**228.** One of the methods of determining mode is (a)  $\text{Mode} = 2 \text{ Median} - 3 \text{ Mean}$  (b)  $\text{Mode} = 2 \text{ Median} + 3 \text{ Mean}$  (c)  $\text{Mode} = 3 \text{ Median} - 2 \text{ Mean}$  (d)  $\text{Mode} = 3 \text{ Median} + 2 \text{ Mean}$



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**229.** If the mean of the following distribution is 2.6, then the value of  $y$  is  
Variable ( $x$ ) : 1 2 3 4 5 Frequency ( $y$ ) : 4 5  $y$  1 2 (a) 3 (b) 8 (c) 13 (d) 24



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**230.** The relationship between mean, median and mode for a moderately skewed distribution is (a)  $\text{Mode} = 2 \text{ Median} - 3 \text{ Mean}$  (b)  $\text{Mode} = \text{Median} - 2 \text{ Mean}$  (c)  $\text{Mode} = 2 \text{ Median} - \text{Mean}$  (d)  $\text{Mode} = 3 \text{ Median} - 2 \text{ mean}$



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**231.** The mean of a discrete frequency distribution  $x_i / f_i; i = 1, 2, \dots, n$  is given by (a)  $\frac{\sum f_i x_i}{\sum f_i}$  (b)  $\frac{1}{n} \sum_{i=1}^n f_i x_i$  (c)  $\frac{\sum i = 1n f_i x_i}{\sum i = 1n x_i}$  (d)  $\frac{\sum i = 1n f_i x_i}{\sum i = 1n i}$



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**232.** If the arithmetic mean of  $x, x + 3, x + 6, x + 9,$  and  $x + 12$  is 10, the  $x =$  (a) 1 (b) 2 (c) 6 (d) 4



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**233.** If the median of the data: 24, 25, 26,  $x + 2, x + 3, 30, 31, 34$  is 27.5, then  $x =$  (a) 27 (b) 25 (c) 28 (d) 30



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**234.** If the median of the data: 6, 7,  $x - 2$ ,  $x$ , 17, 20, written in ascending order, is 16. Then  $x =$  (a) 15 (b) 16 (c) 17 (d) 18



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**235.** The median of first 10 prime numbers is (a) 11 (b) 12 (c) 13 (d) 14



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**236.** If the mode of the data: 64, 60, 48,  $x$ , 43, 48, 43, 34 is 43, then  $x + 3 =$  (a) 44 (b) 45 (c) 46 (d) 48



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**237.** If the mode of the data: 16, 15, 17, 16, 15,  $x$ , 19, 17, 14 is 15, then  $x =$  (a) 15 (b) 16 (c) 17 (d) 19

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**238.** If the mean of a frequency distribution is 8.1 and

$$\sum f_i x_i = 132 + 5k, \quad \sum f_i = 20, \text{ then } k = \text{(a) 3 (b) 4 (c) 5 (d) 6}$$

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**239.** If the mean of 6, 7,  $x$ , 8,  $y$ , 14 is 9, then (a)  $x + y = 21$  (b)

$x + y = 19$  (c)  $x - y = 19$  (d)  $x - y = 21$

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**240.** The arithmetic mean of 1, 2, 3, ...,  $n$  is (a)  $\frac{n+1}{2}$  (b)  $\frac{n-1}{2}$  (c)  $\frac{n}{2}$  (d)

$$\frac{n}{2} + 1$$

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**241.** If the mean of first  $n$  natural numbers is  $\frac{5n}{9}$ , then  $n =$  (a) 5 (b) 4 (c) 9 (d) 10



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**242.** The arithmetic mean and mode of a data are 24 and 12 respectively, then its median is (a) 25 (b) 18 (c) 20 (d) 22



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**243.** The mean of first  $n$  odd natural number is (a)  $\frac{n+1}{2}$  (b)  $\frac{n}{2}$  (c)  $n$  (d)  $n^2$



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**244.** The mean of first  $n$  odd natural numbers is  $\frac{n^2}{81}$ , then  $n =$  (a) 9 (b) 81 (c) 27 (d) 18

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**245.** If the difference of mode and median of a data is 24, then the difference of median and mean is (a) 12      (b) 24      (c) 8      (d) 36

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**246.** If the arithmetic mean of 7, 8,  $x$ , 11, 14 is  $x$ , then  $x =$  (a) 9 (b) 9.5  
(c) 10 (d) 10.5

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**247.** If mode of a series exceeds its mean by 12, then mode exceeds the median by (a) 4      (b) 8      (c) 6      (d) 10

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**248.** If the mean of first  $n$  natural number is 15, then  $n =$  (a) 15 (b) 30 (c) 14 (d) 29



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**249.** If the mean of observations  $x_1, x_2, \dots, x_n$  is  $x$ , then the mean of  $x_1 + a, x_2 + a, \dots, x_n + a$  is (a)  $ax$  (b)  $x - a$  (c)  $x + a$  (d)  $\frac{x}{a}$



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**250.** Mean of a certain number of observations is  $x$ . If each observation is divided by  $m$  ( $m \neq 0$ ) and increased by  $n$ , then the mean of new observation is (a)  $\frac{x}{m} + n$  (b)  $\frac{x}{n} + m$  (c)  $x + \frac{n}{m}$  (d)  $x + \frac{m}{n}$



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