



Important Average Questions for SSC Exams 2023 (English PDF)

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1. A box weighs 8.5 kg when full of sand and weighs 5.5 kg when it is half filled with sand. Weight of the empty box is

- A. 5 kg
- B. 6 kg
- C. 2.5 kg
- D. 4.5 kg

Ans. C

Sol. A box weighs 8.5 kg when full of sand and weighs 5.5 kg when it is half filled with sand.

Therefore,

$$\begin{aligned}\text{Weight of half sand} &= 8.5 - 5.5 \\ &= 3 \text{ kg}\end{aligned}$$

A box weighs 5.5 kg when half filled.

Therefore,

$$\text{Weight of half sand} + \text{weight of empty box} = 5.5 \text{ kg}$$

$$\rightarrow 3 \text{ kg} + \text{weight of empty box} = 5.5 \text{ kg}$$

$$\rightarrow \text{weight of empty box} = 2.5 \text{ kg}$$

2. The average of 5 consecutive odd numbers is x . If one more number 99 is added to these numbers, their average is increased by 12. Find the second smallest number?

- A. 27
- B. 23
- C. 25
- D. 29

Ans. C

Sol.

Since there is difference of 2 between consecutive odd numbers.

So, Let the five numbers be $x - 4, x - 2, x, x + 2, x + 4$

Then the sum of the number = $5x$

$$\text{Average of five consecutive odd numbers} = 5x/5 = x$$

After 99 is added to these numbers,

$$\text{New average} = (5x + 99)/6 = x + 12$$

$$\Rightarrow 5x + 99 = 6x + 72$$

$$\Rightarrow x = 27$$

$$\text{Hence, Second smallest number} = x - 2 = 27 - 2 = 25$$

3. Average cost of oil in first 5 months is 20% less than that of last 7 months. Then what is average cost of oil in whole year?

- A. can't be determined
- B. 0
- C. 1
- D. 2

Ans. A



Sol. Total cost or average cost is not given
Hence can't be determined.

4. Find the maximum sum of the series 41, 38, 35, 32,?

- A. 302
- B. 303
- C. 301
- D. 304

Ans. C

Sol. This is an A.P with $a = 41$ and $d = -3$

The sum will be maximum when last term will also be positive, which can be 2

$$a_n = a + (n-1)d$$

$$\Rightarrow a_n = 2$$

$$\Rightarrow 2 = 41 + (n-1)(-3)$$

$$\Rightarrow 2 = 41 - 3n + 3$$

$$\Rightarrow 3n = 42$$

$$\Rightarrow n = 14$$

$$\Rightarrow \text{Sum of } n \text{ terms} = S_n = \frac{n}{2} \times (a + l)$$

$$\Rightarrow 7 \times 43 = \mathbf{301}$$

5. Average of 5 consecutive even numbers is 10. What is the square of second highest number?

- A. 144
- B. 36
- C. 16
- D. 196

Ans. A

Sol.

Let the numbers be $x - 4, x - 2, x, x + 2, x + 4$.

$$\text{Average} = x = 10$$

$$\text{Square of 2}^{\text{nd}} \text{ highest number} = (x+2)^2 = 12^2 = 144$$

6. The average marks obtained by a student in 6 subjects is 88. On subsequent verification it was found that the marks obtained by him in a subject was wrongly copied as 86 instead of 68. The correct average of the marks obtained by him is:

- A. 86
- B. 87
- C. 85
- D. 84

Ans. C

Sol. Required average:

$$= \frac{88 \times 6 - 86 + 68}{6}$$

$$= \frac{510}{6} = 85$$



7. The average marks of 40 students in an English exam is 72. Later it is found that three marks 64, 62 and 84 were wrongly entered as 68, 65 and 73. The average after mistakes were rectified is

- A. 70
 - B. 72
 - C. 71.9
 - D. 72.1
- Ans. D

Sol. Total marks of 40 students in the English exam = $72 \times 40 = 2880$

Now, since the three numbers were entered incorrectly.

So, the correct total marks of the students = $2880 - (68+65+73) + (64+62+84) = 2884$

Total Correct Marks = 2884

\therefore Correct average = $2884/40 = 72.1$

8. Average of first five odd multiples of 3 is

- A. 12
- B. 16
- C. 15
- D. 21

Ans. C

Sol. First five odd multiples of 3 are 3, 9, 15, 21, and 27

Average = Sum of terms/total number of terms = $(3+9+15+21+27)/5 = 75/5 = 15$

9.

The average age of persons going for a trip is 16.75 years. 20 new persons with an average of 13.25 years joined the group on the spot due to which the average group becomes 15 years. Find the number of persons initially going on the trip.

- A. 24
- B. 20
- C. 15
- D. 18

Ans. B

Sol.

Let the number of persons initially going for picnic be x .

So, the age of x people becomes = $16.75 \times x$

And since 20 people are added to the trip then,

Age of 20 people becomes = 20×13.25

So, according to the question:

$$\therefore 16.75 \times x + 20 \times 13.25 = 15(x + 20)$$

$$\Rightarrow 1.75x = 15 \times 20 - 20 \times 13.25$$

$$\Rightarrow 1.75x = 35$$

$$\Rightarrow x = 20$$

The total no of people is 20.



10. The average of 45 numbers is 30. The average of first 30 numbers is 20 and that of next 14 numbers is 10. What is the last number?

- A. 720
 - B. 530
 - C. 610
 - D. 580
- Ans. C

Sol. \Rightarrow Sum of 45 numbers = $30 \times 45 = 1350$
 $\Rightarrow 1350 = 30 \times 20 + (14 \times 10) + \text{last number}$
 $\Rightarrow 1350 = 600 + 140 + \text{last number}$
 $\Rightarrow 610 = \text{last number}$
 \therefore Last number = 610

11. Three numbers are such that if the average of any two of them is added to the third number, the sums obtained are 168, 174 and 180 respectively. What is the average of the original three numbers?

- A. 84
 - B. 87
 - C. 89
 - D. 86
- Ans. B

Sol.

Let the numbers are x , y and z . Then A.T.Q,

$$\frac{x+y}{2} + z = 168 \dots\dots (i)$$

and $\frac{y+z}{2} + x = 174 \dots\dots (ii)$

and $\frac{x+z}{2} + y = 180 \dots\dots (iii)$

Adding (i), (ii) and (iii):

$$\frac{2(x+y+z)}{2} + (x+y+z) = 522$$

$$\Rightarrow 2(x+y+z) = 522$$

$$\Rightarrow x+y+z = 261$$

So, Average = $\frac{x+y+z}{3} = 87$

12. The average if two numbers A and B is 20, that of B and C is 19 and of C and A is 21. What is the value of A?



- A. 24
 - B. 22
 - C. 20
 - D. 18
- Ans. B

Sol. Total of (A + B) = $2 \times 20 = 40$

Total of (B + C) = $2 \times 19 = 38$

Total of (C + A) = $2 \times 21 = 42$

On adding,

$$\Rightarrow 2(A+B+C) = 40 + 38 + 42 = 120$$

$$\Rightarrow (A+B+C) = 60$$

so,

$$A = (A+B+C) - (B+C) = 60 - 38 = 22$$

13. Average of 100 numbers is 44. The average of these numbers and four other new numbers is 50. The average of the four new numbers will be

- A. 800
- B. 200
- C. 176
- D. 24

Ans. B

Sol. Sum of 100 numbers = $44 \times 100 = 4400$

Sum of 104 numbers = $50 \times 104 = 5200$

Sum of 4 new numbers = sum of 104 numbers - sum of 100 numbers = $5200 - 4400 = 800$

Average of these 4 numbers = $800/4 = 200$.

14. In a class of 50 students, 46% are girls and the remaining are boys. The average of the boys' marks is 58 and that of the girls is 62. What are the average marks of the whole class?

- A. 60.65
- B. 60.38
- C. 60.12
- D. 59.84

Ans. D

Sol.

46% are girls, So, no. of girls = $\frac{46}{100} \times 50 = 23$

No. of boys = $50 - 23 = 27$

Avg. of boys marks = 58

Total marks of boys = $58 \times 27 = 1566$

Avg. of girls' marks = 62

Total marks of girls = $62 \times 23 = 1426$

Total marks of students = $1566 + 1426 = 2992$

Average marks of students = $2992/50 = 59.84$

Hence, option D is the correct answer.

15. Average age of 40 students of a class is 16. When five new students joined the class, the average remains same. Find the average age of new students.



- A. 24
 - B. 18
 - C. 16
 - D. 17
- Ans. C

Sol.

Let x be the average age of the new students. Then,

$$\Rightarrow 5x = 16 \times 45 - 16 \times 40$$

$$\Rightarrow 5x = 16 \times 5$$

$$\Rightarrow x = 16$$

16. A group of boys has an average weight of 36 kg. One boy weighing 42 kg leaves the group and another boy weighing 30 kg joins the group. If the average now becomes 35.7 kg, then how many boys are there in the group?

- A. 30
 - B. 32
 - C. 40
 - D. 56
- Ans. C

Sol. Let there are x number of boys in the group

Total weight of group = $36 \times (x) = 36x$

As per the question, A boy weighing 42 kg leaves and another boy weighing 30 kg joins the group. so,

$$\frac{36x - 42 + 30}{x} = 35.7$$

$$36x = 35.7x + 12$$

$$0.3x = 12$$

$$x = 40$$

So, the number of boys is 40

17. The average revenues of 9 consecutive years of a company is Rs 80 lakhs. If the average of first 5 years is Rs 75 lakhs and that of last 5 years is Rs 87 lakhs, find the revenue for the 5th year.

- A. Rs 90 lakhs
- B. Rs 92 lakhs
- C. Rs 88 lakhs
- D. Rs 86 lakhs

Ans. A

Sol. We know that,

Average of n numbers = (sum of n numbers)/ n

Given,

The average revenues of 9 consecutive years of a company is Rs 80 lakhs.

And the average of the first 5 years is Rs 75 lakhs and that of the last 5 years is Rs 87 lakhs



Therefore,

$$\begin{aligned}\text{Revenue of the fifth-year} &= \text{Revenue of first five years} + \text{Revenue of last 5 years} - \\ &\text{Revenue of first 9 years} \\ &= (5 \times 75) + (5 \times 87) - (80 \times 9) \\ &= 90 \text{ lakhs}\end{aligned}$$

18. Average of 40 innings of a cricket player is 45. Difference between his highest and lowest score is 106. Average of remaining 38 innings is 40 then what is his highest score?

- A. 87
C. 187
B. 193
D. 183

Ans. B

Sol. Total runs scored by player = $40 \times 45 = 1800$
Total runs scored by him in 38 innings = $38 \times 40 = 1520$
Sum of highest and lowest score = $1800 - 1520 = 280$
Let highest score be x and lowest score be $x - 106$
According to question

$$x + x - 106 = 280 \Rightarrow 2x = 386 \therefore x = 193$$

19. There are 6 consecutive odd numbers in increasing order. If the sum of the squares of the first and the last element is 178, then the average value of all the six numbers is:

- A. 7
C. 9
B. 8
D. 10

Ans. B

Sol. Let us suppose that the consecutive odd numbers be $(a-5)$, $(a-3)$, $(a-1)$, $(a+1)$, $(a+3)$, $(a+5)$

$$\frac{(a-5) + (a-3) + (a-1) + (a+1) + (a+3) + (a+5)}{6} = a$$

Then the average =

Now again by next condition we have

$$(a-5)^2 + (a+5)^2 = 178$$

$$\Rightarrow a^2 = 64a = 8$$

Average of all six numbers is 8.

20. In the first 44 overs of a cricket match, the run rate was 5.1 runs/over. Calculate the required run rate in the remaining 6 overs to reach the target of 294 runs?

- A. 12.2
B. 12.8
C. 11.6
D. 11

Ans. C

Sol. In the first 44 overs of a cricket match, the run rate was 5.1 runs/over.

$$\begin{aligned}\text{Therefore, number of runs made in first 44 overs} &= 5.1 \times 44 \\ &= 224.4\end{aligned}$$

$$\begin{aligned}\text{Therefore required run rate to reach the target of 294 runs in 6 overs} &= \frac{294 - 224.4}{6} \\ &= 11.6\end{aligned}$$



21. A number is such that when it is multiplied by 11, it gives another number; which is as much above from 390 as the twice of original number is below 390. The average of the original number and the resultant number is.

- A. 480
- B. 360
- C. 290
- D. None of these

Ans. B

Sol. Let the number be x .

A.T.Q.

$$390 - 2x = 11x - 390$$

$$13x = 780$$

$$x = 60$$

Then,

$$11x = 60 \times 11 = 660$$

$$x = 60$$

$$\text{Average of both numbers} = (660 + 60) / 2 = 360$$

22. Mean of 10 numbers is 30. Later on it was observed that numbers 15, 23 are wrongly taken as 51, 32. The correct mean is

- A. 25.5
- B. 32
- C. 30
- D. 34.5

Ans. A

$$\text{Sol. Difference} = 15 + 23 - 51 - 32 = -45$$

$$30 - \frac{45}{10} = 25.5$$

\therefore Correct average =

23. The average of five consecutive odd numbers is "m". If the next three odd numbers are also included, then what is the increase in the average?

- A. 0
- B. 8
- C. 17
- D. 3

Ans. D

Sol.

The eight consecutive odd numbers:

$$2x + 1, 2x + 3, 2x + 5, 2x + 7, 2x + 9, 2x + 11, 2x + 13, 2x + 15$$

According to the question,

$$(2x + 1 + 2x + 3 + 2x + 5 + 2x + 7 + 2x + 9) / 5 = (10x + 25) / 5 = m$$



$$\Rightarrow x = (m-5)/2 \dots\dots\dots(i)$$

$$\begin{aligned} \text{Average (8 odd nos.)} &= [(10x + 25) + (2x + 11) + (2x + 13) + (2x + 15)]/8 \\ &= (16x + 64)/8 = 2x + 8 \end{aligned}$$

Putting value from equation (i):

$$\text{Average (8 odd nos.)} = 2 \times (m-5)/2 + 8 = m + 3$$

∴ Required answer i.e. the increase in the average = **3**

Alternate Method:

Let the five consecutive odd numbers are 1, 3, 5, 7, 9.

$$\text{Then Average} = (1+3+5+7+9)/5 = 25/5 = 5$$

Now next three odd numbers are added i.e. 11, 13, 15.

$$\text{Then New Average} = (25+11+13+15)/8 = 64/8 = 8$$

Thus, increase in the average = 8 - 5 = **3**.

24. Average marks of 45 students is 66. If marks of one of the students is taken incorrectly as 28 instead of 82 and similarly marks of another student is taken incorrectly as 64 instead of 46. Then find the correct average marks of students.

- A. 67.6
- B. 68.4
- C. 66.8
- D. 65.2

Ans. C

Sol. Total marks obtained by all the students = $66 \times 45 = 2970$

Total corrected marks = $2970 - 28 - 64 + 82 + 46 = 2970 + 36$

New average = $(2970 + 36) / 45 = 66.8$

25. The average of 10 numbers is calculated as 15. It is discovered later on that while calculating the average one number namely 36 was wrongly read as 26. The correct average is.

- A. 20
- B. 18
- C. 16
- D. 14

Ans. C

Sol. A.T.Q.

The average of 10 numbers is = 15

∴ Sum of 10 numbers are = $15 \times 10 = 150$

He mistakenly writes one number 26 instead of 36.

∴ Difference = $36 - 26 = 10$

∴ Actual sum of 10 numbers is = $150 + 10 = 160$

Hence actual average of 10 numbers is = $\frac{160}{10} = 16$



26. Find the average of the squares of first ten natural numbers.

- A. 35.5
- B. 36
- C. 37.5
- D. 38.5

Ans. D

Sol. Sum of squares of first n natural numbers = $[n(n+1)(2n+1)]/6$

Avg of squares of first n natural numbers = $[(n+1)(2n+1)]/6$

Avg of squares of first 10 natural numbers = $(11 \times 21)/6 = 38.5$

27. In a T20 match of 20 overs, team A scored at a run rate of 8.40 runs per over in first innings. Team B is playing and 4 overs are left and the required run rate to tie the match is 10.50 runs per over. What is team B's current run rate?

- A. 7.88 runs per over
- B. 7.75 runs per over
- C. 8.00 runs per over
- D. 7.63 runs per over

Ans. A

Sol.

Total runs scored by team A in first innings = $20 \times 8.40 = 168$ runs

Runs required by team B to tie the match = $4 \times 10.50 = 42$ runs

Therefore, team B is current score = $168 - 42 = 126$

Hence, the current run rate of team B = $\frac{126}{16} = 7.88$ runs per over

28. Rajesh, Sunil and Navin are brothers. Rajesh earns ₹ 3200 per week and Sunil earns ₹ 4000 per week. How much should Navin earn per day in order to make the income of their family as ₹ 10000 per week.

- A. ₹ 2800
- B. ₹ 1200
- C. ₹ 650
- D. ₹ 400

Ans. D

Sol. Salary of Rajesh = ₹ 3200 / week

Salary of Sunil = ₹ 4000 / week

Family's income per week

= Rajesh salary + Sunil salary + Navin salary

= ₹ 10000/week

Navin's salary = $10000 - 3200 - 4000 = ₹ 2800/\text{week}$

Navin's salary per day = $₹ 2800/7 = ₹ 400$



29. Present age of Reva is 75% more than the present age of Vijay. Ajay is 12 years younger to Reva. Present age of Vijay is 20% less than the present age of Ajay. Find the average age of Reva, Ajay and Vijay after seven years.

- A. 39
- B. 33
- C. 41
- D. 37

Ans. A

Sol.

Let the present age of Ajay = x years

Present age of Vijay = $0.80 \times x = 0.8x$ years

Present age of Reva = $1.75 \times 0.8x = 1.4x$

According to the question,

$$1.4x - x = 12$$

$$\text{So, } x = 30$$

So, the present age of Ajay, Vijay and Reva are 30 years, 24 years and 42 years respectively

Average age of Ajay, Vijay and Reva after 7 years =

$$\frac{30+24+42}{3} + 7 = 32 + 7 = 39 \text{ years}$$

30. The average of marks obtained by 120 candidates in a certain examination is 35. If the average marks obtained by passed candidates are 39 and those of the failed candidates are 15, what is the number of candidates who passed the examination?

- A. 100
- B. 120
- C. 150
- D. 140

Ans. A

Sol. Let the number of successful students be x .

Number of unsuccessful students = $120 - x$

A.T.Q.:

$$x \times 39 + (120 - x) \times 15 = 120 \times 35$$

$$\Rightarrow 39x - 15x + 1800 = 4200$$

$$\Rightarrow 24x = 4200 - 1800 = 2400$$

$$\Rightarrow x = 100$$

Hence, Number of students who passed = 100.

Alternate Method (Mixture-Alligation):

Passed Failed

39 15



$$\begin{aligned} & 35 \\ & = 105 \\ & = 5 : 1 \end{aligned}$$

Ratio between passed candidates and failed candidates = 5 : 1

$$\text{So, } 5x + 1x = 120$$

$$\Rightarrow x = 20$$

Hence, Passed candidates = $5 \times 20 = 100$

31. The average mathematics marks of two Sections A and B of Class IX in the annual examination is 74. The average marks of Section A is 77.5 and that of Section B is 70. The ratio of the number of students of Section A and B is

A. 7 : 8

B. 7 : 5

C. 8 : 7

D. 8 : 5

Ans. C

Sol. Let the number of students of section A and B be x and y .

Therefore,

$$74 = \frac{77.5 \times x + 70 \times y}{x + y}$$

$$\Rightarrow 74(x + y) = 77.5x + 70y$$

$$\Rightarrow 77.5x - 74x = 74y - 70y$$

$$\Rightarrow 3.5x = 4y$$

$$\Rightarrow \frac{x}{y} = \frac{4}{3.5} = \frac{8}{7}$$

Thus, the required ratio of the number of students of section A and B is 8 : 7.

Hence, option C is correct.

32. 10 years ago, the average age of family of 4 members was 24 years. Two children having been born with age difference of 2 years, the present average age of the family is the same. Then the present age of the youngest child is :

A. 1 year

B. 3 year

C. 4 year

D. 5 year

Ans. B

Sol.

Total age of 4 members , 10 years ago = $(24 \times 4) = 96$ years

Total age of 4 members now = $96 + (10 \times 4) = 136$ years

Total age of 6 members now = $(24 \times 6) = 144$ years



Sum of the ages of two children = $(144 - 136) = 8$ years

Let The age of younger child be x years.

Then age of the elder child = $(x + 2)$ years

So, $x + x + 2 = 8$

$$\Rightarrow 2x = 6$$

$$\Rightarrow x = 3$$

\therefore age of younger child = 3 years.

33. The average of five numbers is 34.4. The average of the first and the second number is 46.5. The average of the fourth and the fifth number is 18. What is the third number?

A. 45

B. 46

C. 42

D. 43

Ans. D

Sol. Given,

Average of five numbers = 34.4

$$\Rightarrow \text{Total of Five Numbers} = 34.4 \times 5 = 172$$

and

Average of first two numbers = 46.5

$$\Rightarrow \text{Total of first two Numbers} = 46.5 \times 2 = 93$$

also,

Average of last two numbers = 18

$$\Rightarrow \text{Total of last two Numbers} = 18 \times 2 = 36$$

So,

Third number = Total of Five numbers - Total of first two numbers - Total of last two numbers

$$= 172 - 93 - 36 = 43$$

34. The batting average of a cricket player for 64 innings is 62 runs. His highest score exceeds his lowest score by 180 runs. Excluding these two innings, the average of remaining innings becomes 60 runs. His highest score was

A. 180 runs

B. 209 runs

C. 212 runs

D. 214 runs

Ans. D

Sol. Let the cricketer's highest score be x runs

$$\therefore 60 \times 62 + x + x - 180 = 64 \times 62$$

$$\Rightarrow 3720 + 2x - 180 = 3968$$

$$\Rightarrow 2x = 428$$

$$\Rightarrow x = 214 \text{ runs}$$



35. There are three sections A, B and C of class 10th. If number of students in section A, B and C are 105, 63 and 42 respectively and average marks of section A, B, and C in an exam are 63, 67 and 58 respectively. What are the average marks of Class 10th?

- A. 60.6
- B. 63.2
- C. 73.7
- D. 67.3

Ans. B

Sol. Given, Number of students in section A, B and C are 105, 63 and 42 respectively and average marks of section A, B, and C in an exam are 63, 67 and 58 respectively.

$$\text{Average} = \frac{\text{sum of observations}}{\text{Total number of observations}}$$

⇒ **Sum of observations = Average × Total number of observations**

So, Sum of marks of all students of section A of class 10th = $105 \times 63 = 6615$

And Sum of marks of all students of section B of class 10th = $63 \times 67 = 4221$

And Sum of marks of all students of section C of class 10th = $42 \times 58 = 2436$

Total marks scored by class 10th = $6615 + 4221 + 2436 = 13272$

Total number of students = $105 + 63 + 42 = 210$

$$\text{So, Required average} = \frac{13272}{210} = 63.2$$

36. The average weight of a class of 25 students is 'x' kg. If a student whose weight is 100 kg is excluded, then the average of the class reduces by 2 kg. Find the value of 'x'.

- A. 52 kg
- B. 60 kg
- C. 58 kg
- D. 46 kg

Ans. A

Sol.

$$25x = 24 \times (x - 2) + 100$$

$$25x = 24x - 48 + 100$$

$$x = 52$$

So, the value of 'x' is 52 kg

37. The average of 35 numbers is 90. If all the numbers are divided by the same digit then the new average becomes 30. The numbers were divided by

- A. 2
- B. 3
- C. 4
- D. 5



Ans. B

Sol.

If all numbers are divided by a same number then the new average is found by dividing the average by the same number

$$\text{Therefore, } \frac{90}{x} = 30$$

$$x = 3$$

38. Today the average age of 5 members of Tenant family from flat no. 204 is 40 years. If the present age of the youngest member be 12 years. Calculate the average age of the rest of the family at the birth of the youngest member?

A. 30

B. 35

C. 38

D. 28

Ans. B

Sol. \Rightarrow Let four members are A, B, C, D & E. 'E' is the youngest member

$$\therefore \frac{A+B+C+D+E}{5} = 40$$

\Rightarrow Present age = 200

\Rightarrow Present age of youngest member 'E' = 12 years

$\Rightarrow \therefore$ The age of family at the time of birth of youngest member is

$$= 200 - 12 \times 5 = 140$$

\therefore Answer is $140/4 = 35$ years

39. Average of 11 numbers is 7. If every number is doubled, then what will be the new average of the numbers?

A. 3.5

B. 7

C. 10.5

D. 14

Ans. D

Sol. Given: Average of 11 numbers is 7.

$$\text{Total of all Numbers} = (a_1 + a_2 + \dots + a_{11}) = 11 \times 7 = 77$$

Now,

If every number is doubled.

$$\therefore \text{Their total} = (2a_1 + 2a_2 + \dots + 2a_{11})$$

$$= 2(a_1 + a_2 + \dots + a_{11}) = 2 \times 77 = 154$$

$$\text{Their new average} = 154/11 = 14$$

\therefore The average will also be doubled.



40. Average temperature of Monday to Thursday of a week is 30°C and average temperature of Tuesday to Friday of same week is 31°C . If temperature of Friday is 34°C then what is temperature of Monday?

- A. 31°C
- B. 28°C
- C. 25°C
- D. 30°C

Ans. D

$$\text{Sol. Monday} + \text{Tues} + \text{Wed} + \text{Thurs} = 30 \times 4 = 120^{\circ}\text{C}$$

$$\text{Tues} + \text{Wed} + \text{Thurs} + \text{Fri} = 31 \times 4 = 124^{\circ}\text{C}$$

$$\text{Fri} - \text{Mon} = 4^{\circ}\text{C}$$

$$\text{Mon} = 34 - 4 = 30^{\circ}\text{C}$$

41. What will be the average of the following set of scores?

78, 69, 54, 21, 94, 48, 77

- A. 63
- B. 66
- C. 67
- D. 64

Ans. A

Sol. Required average

$$= \frac{78 + 69 + 54 + 21 + 94 + 48 + 77}{7}$$
$$= \frac{441}{7} = 63$$

42. The average height of 5 boys is 175 cm. A sixth boy joined the group and the average height of all the boys in the group now increased by one centimeter. The height of the sixth boy is:

- A. 179 cm
- B. 175 cm
- C. 180 cm
- D. 181 cm

Ans. D

Sol.

$$\text{Total height of students} = 175 \times 5$$

$$\text{Total height of 6 students} = 176 \times 6$$

$$\text{Height of 6}^{\text{th}} \text{ student} = 176 \times 6 - 175 \times 5$$

$$= 1056 - 875$$

$$= 181 \text{ cm.}$$



43. The average of runs of a cricket player of 10 innings was 32. How many runs must he score in his next innings so as to increase his average of runs by 4?

- A. 2
 - B. 4
 - C. 70
 - D. 76
- Ans. D

Sol.

The given average runs in 10 innings is 32.

So when we need to increase the average by 4 runs

Then average after 11 innings = 36.

$$\begin{aligned}\therefore \text{required number of runs} &= (36 \times 11) - (32 \times 10) \\ &= 396 - 320 \\ &= 76.\end{aligned}$$

44. The average weight of 40 students of a class is 36.2kg. When three more students with weights 42.3 kg, 39.7 kg and 39.5 kg join the class, the average weight of the 43 students in the class is?

- A. 39.2 kg
- B. 38.35 kg
- C. 36.5 kg
- D. 37.3 kg

Ans. C

Sol. Total weight of 40 students = $40 \times 36.2 = 1448$ kg

Total weight of 43 students = $1448 + 42.3 + 39.5 + 39.7 = 1569.5$ kg

so, the new average weight of 43 students is,

$$\frac{1569.5}{43} = 36.5 \text{ kg}$$

45. Seven friends spent Rs 14 each on a project and the eighth friend spent Rs 21 more than the average expenditure of all eight of them. What is the amount of total money (in Rs) spent by them?

- A. 133
- B. 136
- C. 141
- D. 155

Ans. B

Sol. Average expenditure of seven friends = 14

Total expenditure of seven friends = $14 \times 7 = 98$

Let the average expenditure of eight person = x

Total expenditure = $8x$

Eighth person expenditure = $x + 21$



$$8x = x + 21 + 98$$

$$7x = 119$$

$$x = 17$$

$$\text{Total expenditure} = 8x = 8 \times 17 = 136$$

46. Find the average of first 107 natural numbers.

- A. 54
- B. 58
- C. 59
- D. 61

Ans. A

Sol. Sum of first n natural numbers = $n(n + 1)/2$

Average = Sum of numbers/number of terms = $[n(n+1)/2]/n = (n + 1)/2$

Required average = $(107 + 1)/2 = 54$

47. The average age of 120 members of a society is 60.7 years. By addition of 30 new members, the average age becomes 56.3 years. What is the average age (in years) of newly joined members?

- A. 36.5
- B. 37.2
- C. 38.3
- D. 38.7

Ans. D

Sol. Given: Average age of 120 members of a society is 60.7 years and by addition of 30 new members, the average age becomes 56.3 years.

Let the average age of the new members be x years,

Then, according to the question:

$$\frac{120 \times 60.7 + 30 \times x}{120 + 30} = 56.3$$

$$\Rightarrow 7284 + 30x = 8445$$

$$\Rightarrow 30x = 1161$$

$$\Rightarrow x = 38.7 \text{ years}$$

48. Bowling average of a cricket player is 15.6 runs/wicket. If he takes 5 wickets for 15 runs then his average will improve by 0.2 run then find the number of tickets taken by him?

- A. 410
- B. 310
- C. 500
- D. 350

Ans. B

Sol. Let no of wickets before last match be x

According to question:



$$15.6 \times x + 15 = 15.4 \times (x + 5)$$

$$15.6x + 15 = 15.4x + 77$$

$$0.2x = 62 \therefore x = 310$$

49. The average of first three numbers is double of the fourth number. If the average of all the four numbers is 12, find the 4th number.

A. 16

B. $\frac{48}{7}$

C. 20

D. $\frac{18}{7}$

Ans. B

Sol. The average of first three numbers is double of the fourth number.

Let first three numbers be a, b and c

And fourth no be d

Then,

$$(a + b + c)/3 = 2d$$

$$\rightarrow a + b + c = 6d \text{ -----eq(1)}$$

the average of all the four numbers is 12

therefore,

$$a + b + c + d = 4 \times 12 = 48 \text{ -----eq(2)}$$

by using eq(1) in eq(2)

$$6d + d = 48$$

$$\rightarrow 7d = 48$$

$$\rightarrow d = 48/7$$

50. A fruit seller sells 40% of his mangoes at Rs. 62/kg, 25% at Rs. 28 per kg and the rest at Rs. 40 per kg. What is the average selling price of one mango.

A. Rs.22.4

B. Rs.42.2

C. Rs.45.8

D. Rs.52.4

Ans. C

Sol.

Let the total no. of mangoes be N. Then,

$$\text{Selling Price of 40\% mangoes sold} = 62 \times (40N/100) = 62 \times (2N/5)$$

$$\text{Selling Price of 25\% of mangoes sold} = 28 \times (25N/100) = 7N$$

$$\text{Selling Price of remaining 35\% mangoes} = 40 \times (35N/100) = 14N$$

$$\therefore \text{Average Selling Price of 1 mango} = \text{Total Selling Price} / \text{Total no. of mangoes}$$



$$\Rightarrow \text{Average} = (62 \times (2N/5) + 7N + 14N) / N$$
$$= \text{Rs. } 45.8$$

51. The average temperature for Monday, Tuesday, Wednesday and Thursday was 48° . The average temperature for Tuesday, Wednesday, Thursday and Friday was 52° . If the temperature on Monday was 42° , then the temperature on Friday was (in degrees)

- A. 58
- B. 56
- C. 52
- D. 50

Ans. A

Sol. **Short Trick:**

temperature on Friday

$$= 42 + 4 \times 4$$
$$= 42 + 16$$
$$= 58$$

Basic Method:

Avg temp of M + Tu + W + Th = 48°

\therefore sum of temperature for M + Tu + W + Th = 192°

Temp of M = 42°

Thus, sum of temp for Tu + W + Th = 150°

Similarly, sum of temperature for Tu + W + Th + F = 208°

Thus, temperature of F = 58°

52. Out of 24 students of a class 6 are 1 m 15 cm in height, 8 are 1 m 5 cm and the rest are 1 m 11 cm. What is the average height of the students?

- A. 1 m
- B. 1 m 10 cm
- C. 1 m 20 cm
- D. 2m

Ans. B

Sol. Sum of the heights of all the 24 students

$$= (6 \times 115 + 8 \times 105 + 10 \times 111) \text{ cm} = 2640 \text{ cm}$$

$$\therefore \text{Average height} = \frac{2640}{24} = 110 \text{ cm}$$

$$= 1 \text{ m } 10 \text{ cm}$$

53. Average of first five odd multiples of 3 is

- A. 12
- B. 16
- C. 15
- D. 21



Ans. C

Sol. Average $= (3+9+15+21+27)/5 = 75/5 = 15$

54. A librarian purchased 50 story books for his library. But he saw that he could get 14 more books by spending Rs. 76 more and the average price per book would be reduced by Rs. 1. The average price (in Rs.) of each book he bought, was:

A. 15

B. 20

C. 25

D. 10

Ans. D

Sol. Let the average of each book be Rs. x .

Then according to the question,

$$64x - 64 = 50x + 76$$

$$\Rightarrow 64x - 50x = 76 + 64$$

$$\Rightarrow 14x = 140$$

$$\Rightarrow x = \frac{140}{14} = \text{Rs. } 10$$

55. The average of five positive numbers is 132. If the first number is four-seventh of the sum of the last four numbers, then the average of the last four numbers is:

A. 90

B. 95

C. 80

D. 105

Ans. D

Sol.

Sum of all five numbers = Average of numbers $\times 5 = 132 \times 5 = 660$

Ratio of first number to sum last four numbers is 4 : 7 (given)

Therefore, sum of last four numbers = $660 \times \frac{7}{11} = 420$

Average of last four numbers = $\frac{420}{4} = 105$

56. The average of 18 numbers is 37.5. If six numbers of average X are added to them, then the average of all the numbers increases by one. The value of x is:

A. 38.5

B. 42

C. 41.5

D. 40

Ans. C



Sol.

According to the question,

$$18 \times 37.5 + 6x = 24 \times 38.5$$

$$675 + 6x = 924$$

$$6x = 924 - 675 = 249$$

$$x = \frac{249}{6} = 41.5$$

57. The average of five consecutive even numbers is m . If the next five even numbers are also included, the average of ten numbers will be:

- A. $m+5$
- B. $m+10$
- C. 10
- D. 11

Ans. A

Sol.

Let five consecutive even numbers be $x, x+2, x+4, x+6$ and $x+8$

We know that, $\text{Average} = \frac{\text{Sum of observations}}{\text{Total number of observations}}$

Hence, average of five consecutive even numbers =
 $(x+x+2+x+4+x+6+x+8)/5 = (5x+20)/5 = x+4$

Given that average of five consecutive even numbers is m

$$\Rightarrow m = x+4$$

$$\Rightarrow x = m-4$$

Now, next five consecutive even numbers are $x+10, x+12, x+14, x+16$ and $x+18$

Sum of next five consecutive even numbers =

$$x+10+x+12+x+14+x+16+x+18 = 5x+70$$

$$\text{Sum of ten numbers} = 5x+20+5x+70 = 10x + 90$$

We know that, $\text{Average} = \frac{\text{Sum of observations}}{\text{Total number of observations}} = \frac{10x+90}{10} = x + 9$

$$\Rightarrow x + 9 = m - 4 + 9 = m + 5$$

58. A batsman has a certain average of runs for 13 innings. In the 14th inning he scores 112 runs thereby increasing his average by 7 runs. His new average is –

- A. 38
- B. 21
- C. 28
- D. 31

Ans. B



Sol.

His new average = x

Total runs in 13 innings = 13 (x - 7)

$$13(x - 7) + 112 = 14x$$

$$13x - 91 + 112 = 14x$$

$$14x - 13x = 21$$

$$x = 21 \text{ runs}$$

Option B is the correct response.

59. How much is the average of squares of first n natural numbers less than the average of cubes of first n natural numbers?

A. $\frac{1}{6}(n + 1)(3n + 2)$

B. $\frac{1}{6}(n^2 - 1)(2n + 1)$

C. $\frac{1}{12}(n^2 - 1)(3n + 2)$

D. $\frac{1}{12}(n + 1)(2n + 3)$

Ans. C

Sol.

Average of squares of first n natural numbers = $\frac{1}{n} \left[\frac{n(n+1)(2n+1)}{6} \right]$

Average of cubes of first n natural numbers = $\frac{1}{n} \left[\frac{n(n+1)}{2} \right]^2$

Difference = $\frac{1}{n} \left[\frac{n^2(n+1)^2}{4} - \frac{n(n+1)(2n+1)}{6} \right] = \frac{(n+1)}{2} \left[\frac{n^2+n}{2} - \frac{2n+1}{3} \right] = \frac{(n+1)}{2} \left[\frac{3n^2 + 3n - 4n - 2}{6} \right]$

$$= \frac{n+1}{12} [3n^2 - n - 2]$$

$$= \frac{n+1}{12} [3n^2 - 3n + 2n - 2]$$

$$= \frac{1}{12} (n+1)(n-1)(3n+2)$$

$$= \frac{1}{12} (n^2 - 1)(3n + 2)$$

60. There are three natural no. if average of any two is added with third no. we get 30, 26 and 22 respectively. Find all the natural no.'s.

A. 13, 5, 21

B. 14, 12, 13

C. 17, 11, 11

D. None of these

Ans. A



Sol. Let the natural no. be x, y, z .

A.T.Q.

$$\frac{x+y}{2} + z = 30 \dots\dots\dots (i)$$

$$\frac{y+z}{2} + x = 26 \dots\dots\dots (ii)$$

$$\frac{z+x}{2} + y = 22 \dots\dots\dots (iii)$$

From eqn. (i), (ii) & (iii)

$$x + y + 2z = 60 \dots\dots\dots (iv)$$

$$y + z + 2x = 52 \dots\dots\dots (v)$$

$$z + x + 2y = 44 \dots\dots\dots (vi)$$

$$4(x + y + z) = 156$$

$$x + y + z = 39$$

From eqn. (iv)

$$x + y + 2z = 60$$

$$x + y + z + z = 60$$

$$39 + z = 60 \text{ or}$$

$$z = 21$$

Similarly,

$$x = 13, y = 5.$$

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