

Average

Solution

1. **Answer: (E)**
Correct average = $(56 \times 24 - 44 - 45 - 61 + 48 + 59 + 67)/24 = 57$
2. **Answer: (E)**
Let the student scored $24x, 30x, 32x$ and $34x$ marks in 4 papers. Therefore, sum of marks in all the papers together = $12x + 15x + 16x + 17x = 60x$.
Average of the total marks obtained = 60%
Let the maximum marks in a paper be 100
Then, $60x = 60$ (4)
 $x = 4$
The marks obtained in 4 papers are 48, 60, 64, 68. He got more than 60% of the marks in 2 papers.
3. **Answer: (A)**
Let the weight of A, B, C and D be a, b, c and d kg respectively.
 $c = a - 12$
 $b = c + 6$
 $\Rightarrow b = a - 6$
 $d = c - 10$
 $\Rightarrow d = a - 22$
Given, $a + b + c + d = 132$
Putting the values of a, b, c and d ,
 $a + (a - 6) + (a - 12) + (a - 22) = 132$
i.e. $a = 43$
And $d = a - 22 = 21$
Average of A and D is $(43 + 21)/2 = 32$.
4. **Answer: (A)**
Average salary = total salary/total strength
No. of class A officers = $5/10 \times 40 = 20$
No. of class B officers = $4/10 \times 40 = 16$
No. of class C officers = 4
Average salary = $(600 \times 20 + 750 \times 16 + 1000 \times 4)/40 = \text{Rs. } 700$
Average monthly salary = $700 \times 30 = \text{Rs. } 21000$
5. **Answer: (D)**
Total age of students of the class = $(29 \times 26) = 754$ years
6. **Answer: (B)**
let the average expenditure per student per day be Rs. x .
then total expenditure per day = $45x$
new total expenditure per day = Rs $(45x + 30)$
new average expenditure = $x - 2$
given, $(45x + 30)/50 = x - 2$
thus, $x = 26$
Now original expenditure of the mess = $45 \times 26 = \text{Rs. } 1170$
Hence, option b.
7. **Answer: (C):**
Sum of first four numbers = $10 \times 4 = 40$
Sum of last four numbers = $8 \times 4 = 32$
Sum of all six numbers = $9 \times 6 = 54$
Now,
Sum of the 3rd and 4th numbers = Sum of first 4 numbers + Sum of last four numbers - Sum of all six numbers = $40 + 32 - 54 = 18$
 \therefore Average of 3rd and 4th numbers = $18/2 = 9$
8. **Answer: (D)**
Let no. of student in class A, B and C be x, y and z
 $\therefore A = 83x$
 $B = 76y$
 $C = 85z$
Now, $A + B = 79x + 79y$
 $B + C = 81(y + z) = 81y + 81z$
 $\therefore 83x + 76y = 79x + 79y$
 $4x = 3y$
 $\frac{x}{y} = \frac{3}{4}$
And, $76y + 85z = 81y + 81z$
 $5y = 4z$
 $\frac{y}{z} = \frac{4}{5}$
 $\therefore x : y : z = 3 : 4 : 5$

$$\begin{aligned}\therefore \text{Required average} &= \frac{83 \times 3 + 76 \times 4 + 85 \times 5}{12} \\ &= \frac{249 + 304 + 425}{12} \\ &= \frac{978}{12} \\ &= 81.5\end{aligned}$$

9. **Answer: (B)**

Let five consecutive even number series
= $a, (a + 2), (a + 4), (a + 6), (a + 8)$

Five consecutive odd number series

ATQ –

$$\frac{a + (a + 2) + (a + 4) + (a + 6) + (a + 8)}{5} = 60$$

$$5a + 20 = 300$$

$$a = 56$$

Third highest number of even series

$$= 56 + 4 = 60$$

Second lowest number of odd number series

$$= 60 \times \frac{5}{13} + 4 = 29$$

Highest number of even number series

$$= (56 + 8) = 64$$

Highest number of odd number series

$$= (29 - 2 + 8) = 35$$

$$\text{Required difference} = 64 - 35 = 29$$

10. **Answer: (B)**

I. Weight of three student initially
= $75 + 68 + 57 = 200$

Weight of three students which are replaced

$$= 32 + 42 + 56 = 120$$

$$\text{Difference} = 200 - 120 = 80$$

This 80 is divided onto all students

$$\text{Total students} = \frac{80}{2.5} = 32$$

II. 50

Quantity I < Quantity II

11. **Answer: (C)**

Average of 100 student = 40

$$\text{Total} = 40 \times 100 = 4000$$

$$\text{Error} = 83 - 53 = 30 \text{ (high)}$$

$$\text{So correct average} \Rightarrow \frac{3970}{100} = 39.7$$

12. **Answer: (C)**

Let, initial no. of people in the group be 'n'.

Let $19x$ and $17x$ be ages of X and Y respectively,

ATQ,

$$2n^2 - 19x = 2(n - 1)^2 \dots\dots\dots(i)$$

$$\text{And } 2n^2 - 19x - 17x = 2(n - 2)^2$$

$$2n^2 - 36x = 2(n - 2)^2$$

$$\dots\dots\dots(ii)$$

Solving (i) and (ii),

$$x = 2, n = 10$$

Average age of group after Z leaves the group

$$= \frac{2 \times 10^2 - 19 \times 2 - 17 \times 2 - 16}{10 - 3} = \frac{112}{7} = 16$$

13. **Answer: (B)**

$$A : B = 1 : 2$$

$$B : C = 2 : 5$$

$$A : D = 1 : 4$$

$$\text{Thus, } A : B : C : D = 1 : 2 : 5 : 4$$

$$(x + 2x + 5x + 4x) / 4 = 12x / 4 = 3x = 84$$

$$\text{So, } x = 28$$

$$\text{Marks in subject A} = 28$$

$$\text{Marks in subject B} = 56$$

$$\text{Marks in subject C} = 140$$

$$\text{Marks in subject D} = 112$$

So, the student scored equal to or more than 60 marks in only two subjects.

Answer: (B)

Let Manish's score be x ,

So Ajay's score = $x + 10$,

Rahul's score = $x - 5$

$$\text{Suresh's score} = 63 \times 3 - (x + x - 5)$$

$$= 194 - 2x$$

$$3(x + 10) = x - 5 + x + 194 - 2x + 90$$

$$3x + 30 = 279$$

$$3x = 249$$

$$x = 83$$

Sum of Manish and Suresh's score

$$= x + 194 - 2x = 111$$

15. **Answer: (C)**

Let father's present age in case the father did not die be X years

Then 3 years ago, it would have been $(X - 3)$ years & 12 years ago, it would have been $(X - 12)$ years

At the time of death of Arun's father, average age of the family of 6 members was 26 years.

So, total age of the family at that time $26 \times 6 = 156$ years

12 years ago, that is 9 years before the death of his father, total age of these 6 members will get reduced by $9 \times 6 = 54$

So, total age of the family excluding his father 12 years ago from now $= 156 - 54 = 102$

Average age of the family 12 years ago $= (\text{Age of father} + \text{total age of other members})/7 = 28$

So, $((x - 12) + 102)/7 = 28$, on solving this we get, $X = 106$ years

This would have been Arun's father present age. He died three years ago, so at the time of his death, Arun's father's age would have been $106 - 3 = 103$ years

Hence, option c.

16. Answer: (C)

Total weight of A, B and C is $(65 \times 3) = 195$ kg

Total weight of A, B, C and D is $(68 \times 4) = 272$ kg

Weight of D $= (272 - 195) = 77$ kg

Weight of E $= 77 - 4 = 73$ kg

Total weight of B, C, D and E $= (67 \times 4) = 268$ kg

Total weight of B, C and D $= 268 - 73 = 195$ kg

Weight of A $= (272 - 195) = 77$ kg.

17. Answer: (A)

Let the least amount of wages be Rs. x

$x + (x + 20) + (x + 40) + (x + 60) = 4 \times 60$

Or, $4x + 120 = 240$

Or, $4x = 240 - 120$

Or, $4x = 120$

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

18. Answer: (C)

Average age of all 40 teachers in 2007 $= 35$

Average age of all 40 teachers in 2009 $= 37$

Total age of 40 teachers in 2009 $= 37 \times 40 = 1480$

Total age of 10 teachers who left in 2009 $= 500$

Total age of 30 teachers in 2009 $= 1480 - 500 = 980$

Total age of 30 teachers in 2012 $= 980 + 30 \times 3 = 1070$

Total age of 20 new teachers in 2012 $= 20 \times 30 = 600$

Total age of 50 teachers in 2012 $= 1070 + 600 = 1670$

Total age of 50 teachers in 2015 $= 1670 + 50 \times 3 = 1820$

19. Answer: (B)

Now total age of 100 bankers in 2004 $= 100 \times 50 + 2 \times 100 = 5200$.

Now 20 bankers whose average age was 60 retired.

So, total age now $= 5200 - 1200 = 4000$.

Now total age of 80 bankers in 2007 $= 4000 + 3 \times 80 = 4240$.

Now, 40 bankers joined PNB in 2007 whose average age was 38 years.

Hence, total age now $= 4240 + 40 \times 38 = 5760$.

Now total age of 120 bankers in 2010 $= 5760 + 3 \times 120 = 6120$.

Hence, average age in 2010 $= 6120/120 = 51$ years.

20. Answer: (C)

Actual total marks of 100 girls $= 100 \times 92 - 40 = 9160$

Actual total marks of 80 boys $= 80 \times 124 + 20 = 9940$

Average marks of the class $= (9160 + 9940)/180 = 106.1$