

Quantitative Aptitude

Problems on Average

Level-1

- Q1** Average of present ages of A and B is 21 years where A is 8 years younger to B. Find the present age of A.
(A) 19 years (B) 17 years
(C) 16 years (D) 15 years
(E) None of these
- Q2** A, B, C and D are four consecutive odd numbers and their average is 64. What is the product of A and D?
(A) 4082 (B) 4002
(C) 4087 (D) 3968
(E) None of these
- Q3** If the average of runs scored by a cricket player in 8 innings was 35, how many runs must he score in his next innings to increase his average runs by 4?
(A) 58 runs (B) 69 runs
(C) 75 runs (D) 71 runs
(E) 80 runs
- Q4** Average of three numbers A, B, and C is 28 and average becomes 30 when value of D is also added. If average of A and B is 34, find the average of C and D.
(A) 24 (B) 28
(C) 30 (D) 26
(E) None of these
- Q5** Average marks obtained by A, B and C in a Physics is 67 and average marks obtained by B, C and D in same subject is 73. If the sum of marks obtained by A and D is 158, then how many marks obtained by A?
(A) 76 (B) 72
(C) 60 (D) 70
(E) 74
- Q6** A batsman makes a score of 92 runs in the 19th inning and thus increases his average by 2. Find his average after 19th inning?
(A) 54 (B) 55
(C) 56 (D) 57
(E) 59
- Q7** Meena buys 4 sarees at an average cost of Rs.1200 from a shop, If she buys 2 more sarees at an average cost of Rs.1500 from the same shop, what will be the average of all the sarees she buys in total?
(A) 1300 (B) 2000
(C) 1400 (D) 1500
(E) None of these
- Q8** The average weight of a class of 22 students is 40 kg. When the weight of the teacher is also included, the average weight increases by 750 gm. What is the weight of the teacher?
(A) 62.25 kg (B) 57.25 kg
(C) 65.65 kg (D) 75.75 kg
(E) 64.50 kg
- Q9** The average of 20 numbers is M. If one number which is 80% of M is removed and another number which is 50% more than M added then what is the new average?
(A) 1.015 M (B) 1.115 M
(C) 0.835 M (D) 1.035 M
(E) 1.235 M
- Q10** In a class the average of total students is 70. The average of boys in the class is 80 and the average of girls in the same class is 50. Find the ratio of the boys and girls in the class.
(A) 1:3 (B) 2:3
(C) 2:1 (D) 4:5
(E) None of these



- Q11** The bowling average of a player in one match is 5 and again the bowling average of the same player in another match is 8. If the total bowling average of both the matches is 6, then find the ratio of the wickets he takes in both matches.
 (A) 2:1 (B) 1:2
 (C) 4:5 (D) 5:4
 (E) 3:7
- Q12** The average mark of a group of students is 48. Out of these, 3 students with marks 43, 68, and 51 are removed and a new student with a score of 84 is added to the list. If the number of students in the group was 8, then find the percentage increase in the average marks with respect to the initial average.
 (A) 6.25% (B) 5.75%
 (C) 8.25% (D) 6.75%
 (E) None of these
- Q13** If the average of a set of 35 numbers is initially calculated as 170, but it is discovered that one of the numbers (65) was recorded incorrectly as 95, what is the revised average (approx.) of the set?
 (A) 180 (B) 175
 (C) 172 (D) 170
 (E) 169
- Q14** The average temperature for Monday, Tuesday, Wednesday and Thursday was 25 degrees and for Tuesday, Wednesday, Thursday and Friday was 22 degrees. If the temperature on Monday was 20 degrees. Find the temperature on Friday?
 (A) 5 (B) 8
 (C) 3 (D) 7
 (E) None of these
- Q15** Average temperature of cities A and B is $x^{\circ}\text{C}$, that of cities B and C is $(x - 2)^{\circ}\text{C}$ and that of cities C and D is $(x - 4)^{\circ}\text{C}$. If the temperature of city D is 4°C more than that of city A, then find the temperature of city D?
 (A) $(x - 2)^{\circ}\text{C}$ (B) $2x^{\circ}\text{C}$
 (C) $(x + 1)^{\circ}\text{C}$ (D) $x^{\circ}\text{C}$
 (E) None of these
- Q16** There are _____ boys in the class. The average weight of the first 30 boys in the class is _____ kg. The total weight of all the students in the class is 2850kg and the weight of other _____ boys is 1110kg.
 If 50 and 20 is the value of the first and third blank respectively then find the suitable value in the second blank?
 (A) 58 (B) 52
 (C) 54 (D) 56
 (E) 60
- Q17** **Directions: The average age of 5 members is 21 years. If the age of the youngest member is 5 years, find the average age of the family at the birth of the youngest member.**
 (A) 20 (B) 18
 (C) 30 (D) 25
 (E) None of these
- Q18** In a class of 120 students, the average weight of the class is 40 kg. If the average weight of the girls is 20 kg and that of the boys in the class is 60 kg, then what is the number of girls in the class.
 (A) 50 (B) 40
 (C) 60 (D) 80
 (E) None of these
- Q19** The average weight of a class of 25 girls is 50 kg. It was later found that the weight of two girls was read as 48 kg and 42 kg instead of 42 kg and 43 kg. Find the actual average weight of the class.
 (A) 47.50 (B) 58.50
 (C) 52.70 (D) 49.80
 (E) 50.40
- Q20** In a class, a student's score was erroneously recorded as 75 instead of 55, resulting in a half ($\frac{1}{2}$) point increase in the average score for the



entire class. How many students are enrolled in the class?

(A) 40

(B) 54

(C) 43

(E) 50

(D) 48



Level-2

- Q1** The average of 28 numbers is 172. Later it is realized that by mistake 3 numbers are taken as 230, 190, 25 instead of 190, 160, and 140 respectively. Find the actual average.
 (A) 167.4 (B) 175.3
 (C) 173.6 (D) 176.6
 (E) 160.5
- Q2** 20 students appear in a test. Average of marks obtained in the test by them is 78. If due to typing mistake, the marks of one student was printed 36 instead of 63 then what is the correct average of the marks obtained by them?
 (A) 83 (B) 79.35
 (C) 75.2 (D) 80.22
 (E) none of these
- Q3** A cricketer has played 'a' matches and scored average of 'b' runs. If the cricketer plays 'c' more matches and scores average of 'd' runs in those matches, what will be the cricketer's average runs per match?
 (A) $\frac{b+d}{a+c}$
 (B) $\frac{ab+cd}{a+b}$
 (C) $\frac{ab+cd}{a+c}$
 (D) $\frac{ac+bd}{c+d}$
 (E) $\frac{b-d}{a+c}$
- Q4** Anuj purchased 5 books at an average price of ₹2x, 3 books at an average price of ₹3x and 7 books at an average price of ₹(2x - 15). If he paid a total average price of ₹26, then find the total price he paid for 7 books?
 (A) Rs.115 (B) Rs.55
 (C) Rs.35 (D) Rs.125
 (E) Rs.105
- Q5** A person buys 5 books in total from a shop but in two go. In the first go he buys 3 books at an average cost price of Rs. 300 and in the second go he buys the remaining books at an average cost price of Rs.800. Find the average cost price of all the books he buys from the shop.
 (A) 400 (B) 300
 (C) 500 (D) 700
 (E) None of these
- Q6** There is a group of three person A, B and C. The ratio between ages of A and B is 7: 8 and that of between B and C is 4 : 5. If the average age of all three is 50 years, then what was the ratio between ages of A and C before 12 years?
 (A) 4: 7 (B) 5: 8
 (C) 10: 17 (D) 8: 15
 (E) 6: 11
- Q7** A father has invested the same amount in two schemes, in one scheme he gets a total 5% as interest and in the other scheme he gets a total of 7% as interest. Find the average interest rate he gets from his total investment.
 (A) 6 (B) 5
 (C) 4 (D) 2
 (E) None of these
- Q8** A College has raised 75% of the amount it needs for a new building by receiving an average donation of Rs.2400 from the parents of the students. The people already solicited represent the parents of 60% of the students. If the college is to raise exactly the amount needed for the new building, what should be the average donation from the remaining students to be solicited? (in Rs.)
 (A) 400 (B) 600
 (C) 1200 (D) 800
 (E) 1000
- Q9** A bowler's bowling average in ODI is 12 and the bowling average of that player in Test is 15. The bowling average of him in all his career is 14. If the total wickets he took is 30 wickets, then find the wickets he took in ODI matches.



- (A) 10 (B) 12
(C) 15 (D) 18
(E) 20

Q10 Four persons 'Anand', 'Bipin', 'Charan' and 'Deepak' have different amounts with them. 'Deepak' has twice the amount than that of 'Anand'. The amount 'Bipin' has is 12.5% more than that of 'Deepak'. The amount 'Charan' has is equal to the average amount all four persons have. If the sum of the average amount all four have and the amount 'Anand' has is Rs. 660, then find the amount 'Bipin' has.

- (A) Rs. 480 (B) Rs. 540
(C) Rs. 360 (D) Rs. 420
(E) None of these

Q11 In Ashes Test cricket series, Wasim scored an average of 120 runs per match in the first 3 match and an average of 140 runs per match in the last four match. What is Wasim's average runs for the first match and the last two match if his average runs per match for all the five match is 122 and total number of matches are 5?

- (A) 120 (B) 200
(C) 150 (D) 100
(E) None of these

Q12 If the average temperature of a town was 90 degrees for the first four days of a month and the average temperature for the first, second, third, and fifth days was 92 degrees, and the temperatures of the fourth and fifth days were in the ratio 13 : 17, what is the temperature on the fifth day?

- (A) 102 degree (B) 94 degree
(C) 92 degree (D) 96 degree
(E) None of these

Q13 Average weight of the class is 25 kg and the average weight of the class is increased by 1 kg when the teacher is included. If the number of students in the class is 40 and the weight of

the teacher is x , then find the value of (50% of $x + 25$).

- (A) 55 kg (B) 58 kg
(C) 60 kg (D) 65 kg
(E) None of these

Q14 A bowler has taken a total of 20 wickets in his two matches together and the ratio of his wickets in 1st and 2nd match is 3:2 respectively. In 1st his bowling average is 42 and in 2nd match his bowling average is 62, then find the total bowling average of him in all matches.

- (A) 40 (B) 60
(C) 50 (D) 80
(E) 90

Q15 Two groups of teachers, whose average ages are 36 years and 48 years, combine to form a third group whose average age is 40 years. What is the ratio of the number of teachers in the first group to that of in the second group?

- (A) 1:1 (B) 2:1
(C) 2:3 (D) 3:4
(E) 5:8

Q16 Average marks obtained by a group of students is 68. Out of these, 3 students with marks 63, 72 and 58 left the group and a new student who obtained 91 marks joined the group. If the number of students in the group was 12, then find the percentage increase in the new average marks with respect to the initial average marks.

- (A) 8% (B) 2%
(C) 5% (D) 9%
(E) None of these

Q17 Average temperature of the first three days of a week starting from Mon is $x^{\circ}\text{C}$ and that of the last 4 days is $(x - 1)^{\circ}\text{C}$. Average temperature of the whole week is $32\frac{3}{7}^{\circ}\text{C}$. If the average temperature of the first 4 days is 34.5°C , then find the temperature of Thu?

- (A) $(x + 6)^{\circ}\text{C}$ (B) $(x + 9)^{\circ}\text{C}$
(C) $(x + 2)^{\circ}\text{C}$ (D) $(x + 5)^{\circ}\text{C}$



(E) $(x + 3)^{\circ}\text{C}$

- Q18** A, B, C, D and E are five persons. The weight of A, B and C is 90%, 112% and 94% respectively of the average weight of all five. The ratio of weight of D and E is 6 : 11. The difference between the weight of D and E is 75kg. What is the average weight of all the five persons?

(A) 84 kg (B) 127 kg
(C) 90 kg (D) 125 kg
(E) None of these

- Q19** The average weight of 15 monkeys sitting on a tree is 35 kg. The average weight of the first 6 monkeys is 28 kg and the average of the last 6 monkeys is 40 kg. Weight of 7th monkey is 2.32 kg more than 8th monkey and 1.15 kg less than the weight of 9th monkey. Find the average weight of 7th and 9th monkey.

(A) 38.995 kg
(B) 39.965 kg
(C) 36.965 kg
(D) 39.665 kg
(E) 40.625 kg

- Q20** A trader bought some oranges from different places and at different prices. Average price of all oranges is 50 rs/piece. During his journey from market to village 100 oranges were rotten. Due to this he decided to fix the price of oranges to 60 rupees/piece instead of 90 rupees/piece. Due to this the average price of oranges becomes 45 rs/piece. How many dozen oranges he buys from the market.

(A) 600 (B) 300
(C) 150 (D) 50
(E) 100



Level-3

- Q1** Average weight of a class of 32 students decreased by $1\frac{1}{9}\%$ when a student of 40 kg weight joined the class and another student of weight 56 kg left the class. If the initial average weight of the class was '10x' kg and there were 10x students in another class, then what would be the average weight of another class, whose total weight is 2160 kg?
- (A) 36 kg (B) 60 kg
(C) 45 kg (D) 48 kg
(E) 50 kg
- Q2** Average weight of four friends A, 'B', 'C' and 'D' is x kg. When 'D' is replaced by 'E' then the average increases by 14.25 kg. When 'C' is replaced by 'E', average increases by 6.75kg. If the average weight of 'C', 'D' and 'E' is 74 kg then the weight of 'E' is how much percent more than that of 'C'?
- (A) 50%
(B) 42%
(C) 36%
(D) Cannot be determined
(E) 76%
- Q3** The average salary of all Sharma family members is Rs. 98 per day. The difference between the family's highest and lowest earnings is Rs.140. If the highest and lowest paid members are excluded, the group's average salary falls by Rs. 2. Which of the following will be the initial number of members if the minimum salary is more than Rs 45 and a multiple of 7, and the number of members was initially equal to a prime number with both digits prime?
- I.23 II'.37 III. 53 IV. 73
- (A) Only I
(B) Only II
(C) Both I and III
(D) Both II and III
- (E) Both I and II
- Q4** A player scored runs at an average of 72 in 'x' matches in ODIs and at an average of 48 in (x - 50) matches in T-20s. If total runs scored by him in ODIs are 5400 more than that scored in T-20s, then find the average runs scored by him in all the ODIs and T-20s?
- (A) 66 (B) 72
(C) 60 (D) 75
(E) 63
- Q5** There are five students in a class – P, Q, R, S, and T. Marks obtained by P is $(3M + 2N)$, by Q is $(N + 2M)$, by R is $(2N + M)$. Marks obtained by S is 100 (more than the rest 4 students) which is twice as that of T. Marks obtained by T is $(N + 2Y)$. $M > N$, both are distinct multiple of 10. Find the average score of five students together if the difference between marks of Q and R is at least 10?
- I. $2(3M - 2N) - 4^2$
II. $3Y + 4$
III. $3(4N - Y) + 4^2$
- (A) II only (B) I and III only
(C) I and II only (D) I, II and III
(E) I only
- Q6** The average income of a family is Rs. 98 per day. The difference between the highest and lowest amount earned in the family is Rs.140. If highest and lowest earning members are excluded the average earning of the group decreased by Rs. 2. If the minimum earning is more than Rs 45 and is multiple of 7 and the number of members initially was equal to a prime number, with its both digits prime then **which of the following will be the initial number of members?**
- I.53
II.37
III.23



IV. 73

- (A) Only I
- (B) Only II
- (C) Both I and III
- (D) Both II and III
- (E) only III

Q7 The average cost price of articles 'A' and 'B' together is Rs. 100 more than the average cost price of articles 'A', 'B' and 'C' together. If article 'A' was marked 25% above its cost price and sold after a discount of Rs. 50 while article 'C' was marked 20% above its cost price and sold after a discount of Rs. 360, then the ratio of their selling prices will be 11:12, respectively.

Find the selling price of article 'B' if it is sold at a profit of 15%, given that cost price of article 'B' is Rs. 1,600 more than that of 'A'.

- (A) Rs. 4,510
- (B) Rs. 3,600
- (C) Rs. 3,910
- (D) Rs. 4,600
- (E) None of these

Q8 In a class, there are 'x' students and the average weight of the students is 'y' kg. If one new student whose weight is 50 kg is added, then average weight of class is increased by 1 kg. If one more student whose weight is 50 kg is added, then the average weight of the class increases by 1.5 kg over the original average. Which of the following can be found according to the given information?

- (i) If Anant join the class, the average weight of the class increased by 0.5 kg, find the weight of Anant.
- (ii) The number of students in the class.

(iii) Find the value of $(y - 3x)$

- (A) Only (i)
- (B) All (i), (ii) and (iii)
- (C) Only (ii) and (iii)
- (D) Only (iii)
- (E) Only (ii)

Q9 Average weight of all the students in a class is _____. If 5 students having an average weight of 64 kg while 3 students having an average weight of 98 kg are added then overall average weight of the whole class increases by ____ and total number students in the class initially is less than 36.

The values given in which of the following options will fill the blanks in the same order in which is it given to make the statement true:

- I. 40, 12.25
- II. 56, 4.15
- III. 52, 4.125
- (A) Only I
- (B) Only II
- (C) Only III
- (D) Only I and II
- (E) Only II and III

Q10 The average of the income of 'A' in 2019 and 2020 is Rs. 40000. He saves 25% of his income in 2019 such that his savings in both years are the same. If his expenditure in 2020 was equal to his average income of 2019 and 2020, then find the expenditure of 'A' in 2019.

- (A) Rs. 24000
- (B) Rs. 32000
- (C) Rs. 28000
- (D) Rs. 30000
- (E) Rs. 35000



Answer Key

Level-1

Q1 (B)
Q2 (C)
Q3 (D)
Q4 (D)
Q5 (D)
Q6 (C)
Q7 (A)
Q8 (B)
Q9 (D)
Q10 (C)

Q11 (A)
Q12 (A)
Q13 (E)
Q14 (B)
Q15 (D)
Q16 (A)
Q17 (A)
Q18 (C)
Q19 (D)
Q20 (A)



Level-2

Q1 (C)
Q2 (B)
Q3 (C)
Q4 (E)
Q5 (C)
Q6 (B)
Q7 (A)
Q8 (C)
Q9 (A)
Q10 (B)

Q11 (D)
Q12 (A)
Q13 (B)
Q14 (C)
Q15 (B)
Q16 (C)
Q17 (A)
Q18 (D)
Q19 (B)
Q20 (D)



Level-3

Q1 (D)

Q2 (C)

Q3 (E)

Q4 (E)

Q5 (C)

Q6 (D)

Q7 (C)

Q8 (B)

Q9 (D)

Q10 (A)



Hints & Solutions

Level-1

Q1 Text Solution:

Average of present ages of A and B = 21 years
 The sum of present ages of A and B = $21 \times 2 = 42$ years
 Present age of B - Present age of A = 8 years
 Present age of A = $\frac{42-8}{2}$
 = 17 years

Q2 Text Solution:

Let (X = A) be an Odd integer
 Then average = $\frac{x+x+2+x+4+x+6}{4} = 64$
 Or $x = 61 = A$ and $x + 6 = 67 = D$
 So, Product of A and D = $61 \times 67 = 4087$

Q3 Text Solution:

Average = $\frac{\text{Total runs}}{\text{no. of innings}} = 35$
 So, total = Average \times no. of innings = $35 \times 8 = 280$.
 Now increase in avg = 4 runs. So, new avg = $35 + 4 = 39$ runs
 Total runs = new avg \times new no. of innings = $39 \times 9 = 351$
 Runs made in the 9th inning = $351 - 280 = 71$ runs
 \therefore The answer is 71 runs.

Q4 Text Solution:

Sum of A, B, and C = $28 \times 3 = 84$
 Sum of A, B, C, and D = $30 \times 4 = 120$
 Value of D = $120 - 84 = 36$
 Sum of A and B = $34 \times 2 = 68$
 Value of C = $84 - 68 = 16$
 Sum of C and D = $36 + 16 = 52$
 Required average = $\frac{52}{2}$
 = 26

Q5 Text Solution:

Here, $A + B + C = 3 \times 67 = 201$
 $B + C + D = 3 \times 73 = 219$
 $D - A = 219 - 201 = 18 \Rightarrow D = A + 18$
 $A + D = 158 \Rightarrow D = 158 - A$
 Then, $158 - A = A + 18$
 $A = 70$

Q6 Text Solution:

Let the average after 19th inning = x
 Then average after 18th inning = $x - 2$
 $18(x-2) + 92 = 19x$
 $18x - 36 + 92 = 19x$
 $x = 92 - 36 = 56$
 \therefore The answer is 56.

Q7 Text Solution:

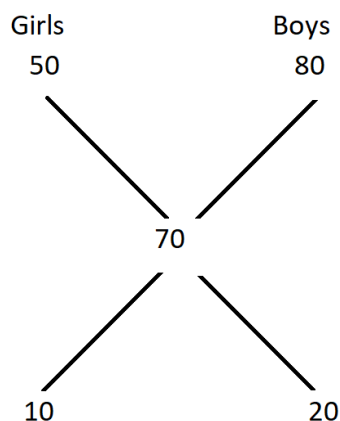
Cost of 4 sarees = Rs 1200
 Cost of 2 sarees = Rs 1500
 By rule allegation;
 Average of all the sarees, X
 $= \frac{(1200 \times 4) + (1500 \times 2)}{4+2}$
 $= \frac{7800}{6} = 1300$

Q8 Text Solution:

The total weight of 22 students = $40 \times 22 = 880$ kg
 New average weight = $40 + 0.75 = 40.75$ kg
 Total weight of 22 students and teacher together = $23 \times 40.75 = 937.25$
 Weight of teacher = $937.25 - 880 = 57.25$ kg

Q9 Text Solution:

Total sum = 20M
 New total = $20M - 80\% \text{ of } M + 150\% \text{ of } M$
 $= 20M + 70\% \text{ of } M$
 $= 20M + 0.7M$
 $= 20.7M$
 New average = $\frac{20.7M}{20} = 1.035M$

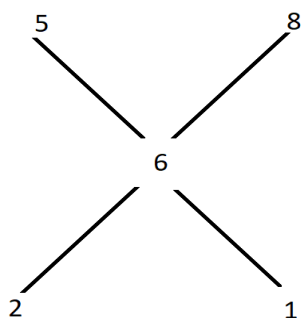
Q10 Text Solution:


Hence,

by rule of allegation:

Ratio of boys : girls = $20 : 10 = 2 : 1$

Q11 Text Solution:



By rule of allegation;

Ratio of wickets he takes in both the matches
= $2 : 1$

Q12 Text Solution:

Let the sum of the marks of the unchanged 5 students from the initial tally be equal to 'x', such that,

$$\frac{x + 43 + 68 + 51}{8} = 48 \text{ (Given)}$$

Then,

$$x = 384 - (43 + 68 + 51) = 384 - 162 = 222$$

With the addition of a new students marks,

Sum of marks of 6 students becomes = $x + 84 = 222 + 84 = 306$

$$\text{New average} = \frac{306}{6} = 51$$

$$= \frac{51-48}{48} \times 100 = 6.25\%$$

Q13 Text Solution:

Given:

The average of 35 data is 170

65 is wrongly written as 95

Calculation:

The total sum of all 35 number = $170 \times 35 = 5950$

Now, 65 is wrongly written as 95

The correct sum of data = $5950 - (95 - 65) = 5920$

Then, Correct average of the data = $\frac{5920}{35} \approx 169$

\therefore The correct average is approx. 169

Shortcut trick

Difference between wrong and actual numbers
= $95 - 65 = 30$

As the actual number is less than the wrong number

So the average decreased by $\frac{30}{45} = \frac{2}{3}$

The correct average = $170 - \frac{2}{3} = \frac{508}{3}$

\therefore The correct average is 169 approx.

Q14 Text Solution:

Sum of temperature on monday, tuesday, wednesday, thursday =

$$25 \times 4 = 100 \text{ degrees}$$

Sum of temperature on tuesday, wednesday, thursday, friday

$$= 22 \times 4 = 88 \text{ degrees}$$

Monday's temperature = 20 degree

Therefore ; Friday temperature

$$= 88 - (100 - 20) = 8 \text{ degree}$$

Option '8 degree' is the correct answer.

Q15 Text Solution:

$$A + B = 2x \text{ -----(1)}$$

$$B + C = 2(x - 2) \text{ -----(2)}$$

$$C + D = 2(x - 4) \text{ -----(3)}$$

By equation (2) - equation (3):

$$B - D = 2x - 4 - 2x + 8$$

$$B - D = 4 \text{ -----(4)}$$

From equations (1) and (4):

$$A + D = 2x - 4 \text{ -----(5)}$$

Since, the temperature of city D is 4°C more than that of city A.

So,

$$D - A = 4 \text{ -----(6)}$$

By equations (5) + (6):

$$2D = 2x$$

$$D = x^\circ\text{C}$$

Q16 Text Solution:

Total weight of all the students in the class = 2850kg

Weight of 20 boys in the class = 1110 kg

Average weight of first 30 boys = $\frac{2850-1110}{30} = 58 \text{ kg}$.

Q17 Text Solution:

Ans: 20

Average = Sum of the ages / No. of member

Sum of 5 members = $21 \times 5 = 105$

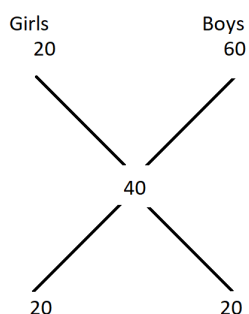
New sum of the family at the birth of youngest member:



Sum of 5 members = $105 - 5 = 100$

$$\text{New average} = \frac{100}{5} = 20$$

Q18 Text Solution:



By rule of allegation;

$$\text{Girls : Boys ratio} = 20 : 20 = 1 : 1$$

$$\text{Hence, number of girls} = \frac{1}{2} \times 120 = 60$$

Hence the answer is 60.

Q19 Text Solution:

$$\begin{aligned} \text{Required average} &= 50 - \frac{\{(48+42)-(43+42)\}}{25} \\ &= 50 - 0.2 \\ &= 49.80 \end{aligned}$$

Q20 Text Solution:

Let there be x students in the class.

$$\text{Total increase in marks} = \left(x \times \frac{1}{2}\right) = \frac{x}{2}$$

$$\frac{x}{2} = (75 - 55)$$

$$\Rightarrow \frac{x}{2} = 20$$

$$\Rightarrow x = 40$$



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Level-2

Q1 Text Solution:

Difference between correct and incorrect numbers = $(190 + 160 + 140) - (230 + 190 + 25)$

$$\Rightarrow 490 - 445 = 45$$

For incorrect averages, as per the formula,

$$\text{Incorrect sum of numbers} = 172 \times 28 = 4816$$

Because the difference between correct and incorrect numbers is positive we need to add it to the incorrect sum of numbers to obtain the correct sum.

$$\text{Correct sum} = 4816 + \text{difference}$$

$$\Rightarrow 4816 + 45$$

$$\Rightarrow 4861$$

As per the formula, we get:

$$\text{Required average} = \frac{4861}{28} = 173.6$$

\therefore The correct or actual average of numbers is 173.6.

Q2 Text Solution:

Total marks obtained by the 20 students = $78 \times 20 = 1560$

$$\text{Correct total marks will be} = 1560 - 36 + 63 = 1587$$

$$\text{Correct average is} = \frac{1587}{20} = 79.35$$

Q3 Text Solution:

Total runs scored by cricketer in 'a' matches = ab

Total runs scored by cricketer in 'c' matches = cd

Total matches played = $(a + c)$

Total runs scored in $(a + c)$ matches = $ab + cd$

$$\text{Required average} = \frac{ab + cd}{a + c}$$

Q4 Text Solution:

Total number of books purchased by Anuj = $5 + 3 + 7 = 15$

$$\text{Total price paid by Anuj} = 15 \times 26 = ₹390$$

So,

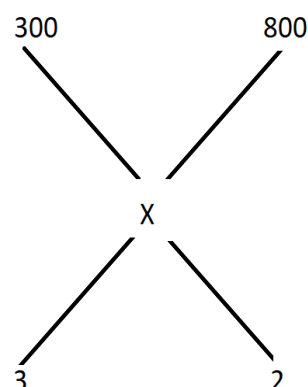
$$[5 \times 2x] + [3 \times 3x] + [7 \times (2x - 15)] = 390$$

$$10x + 9x + 14x - 105 = 390$$

$$x = 15$$

$$\text{Total price paid for 7 books} = 7 \times (2 \times 15 - 15) = ₹105$$

\therefore Hence the answer is ₹105

Q5 Text Solution:

By rule of allegation;

$$\text{Average cost of all the book, } X = \frac{(300 \times 3) + (800 \times 2)}{5} = 500$$

\therefore Hence the answer is 500.

Q6 Text Solution:

$$A:B = 7:8$$

$$B:C = 4:5$$

$$A:B:C = 7:8:10$$

Let their ages be 7k, 8k and 10k

$$\text{Average age} = \frac{(7k + 8k + 10k)}{3} = \frac{25k}{3}$$

$$\frac{25k}{3} = 50$$

$$k = 6$$

$$\text{Present age of A} = 7k = 7 \times 6 = 42 \text{ years}$$

$$\text{Present age of C} = 10k = 10 \times 6 = 60 \text{ years.}$$

$$12 \text{ years ago age of A} = 42 - 12 = 30 \text{ years}$$

$$12 \text{ years ago age of C} = 60 - 12 = 48 \text{ years.}$$

$$\text{Required ratio} = 30:48 = 5:8$$

Q7 Text Solution:

In both schemes he invested the same amount.

In one scheme = 5%

In other scheme = 7%

Required average

$$= \frac{(5 \times 1) + (7 \times 1)}{1+1} = \frac{12}{2} = 6\%$$

Q8 Text Solution:

Let, the No. of parents be "X" who has been asked for the donations.



People already solicited = 60% of X = 0.6x

Remaining people = 40% of X = 0.4x

The amount collected from the parents solicited

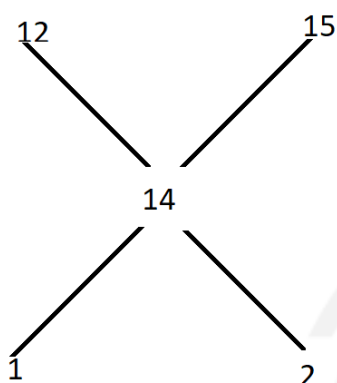
= 2400

Now, its given that $1440x = 75\%$ of Required amount,

So, the remaining 25% amount = 480

Thus, an average donation from remaining parents = $480 \div 0.4 = \text{Rs. } 1200$

Q9 Text Solution:



By rule of allegation;

Number of wickets taken in ODI = $\frac{30}{3} \times 1 = 10$

Q10 Text Solution:

Let 'Anand' have Rs. a

Therefore, the amount possessed by 'Deepak' = Rs. 2a

Amount possessed by 'Bipin' = $1.125 \times 2a = \text{Rs. } 2.25a$

Let the average amount possessed by all four be Rs. x

Therefore, the amount possessed by 'Bipin' = Rs. x

According to the question, $2.25a + 2a + a = 4x - x$

Or, $5.25a = 3x$

Or, $\frac{x}{a} = \frac{7}{4}$

Therefore, $a = 660 \times \frac{4}{11} = \text{Rs. } 240$

Amount possessed by 'Bipin' = $2.25a$
 $= 2.25 \times 240$
 $= \text{Rs. } 540$

Q11 Text Solution:

Wasim's average score in the first 3 matches = 120

Let the scores in the 5 matches be denoted by M1, M2, M3, M4, and M5

$M1 + M2 + M3 = 120 \times 3 = 360$ (i)

Average of last 4 match = 140

$\frac{M2 + M3 + M4 + M5}{4} = 140$

$M2 + M3 + M4 + M5 = 560$ (ii)

Average of all the matches

$\frac{M1 + M2 + M3 + M4 + M5}{5} = 122$

$\therefore M1 + M2 + M3 + M4 + M5 = 122 \times 5 = 610$(iii)

From solving above equation, we get $M1 + M4 + M5 = 300$

Required average runs = $\frac{300}{3} = 100$

Q12 Text Solution:

Sum of temperatures on 1st, 2nd, 3rd and 4th days = (90×4)

= 360 degrees ... (1)

Sum of temperatures on 1st, 2nd, 3rd and 5th days = (96×4)

= 384 degrees(2)

Subtracting (1) From (2), we get :

Temp, on 5th day – Temp on 4th day = 24 degrees.

Let the temperatures on 4th and 5th days be 13x and 17x degrees respectively.

Then, $17x - 13x = 24$ or $4x = 24$.

$x = 6$

Temperature on the 5th day = $17x = 102$ degrees.

Q13 Text Solution:

average weight of students = (total weight of students) / (number of students)

As per question;

Total weight of students;

= (average weight of students)

\times (number of students)

total weight of students = 25×40

total weight of students = 1000 kg

Now;

average weight of class with teacher;

= $\frac{(\text{total weight of students} + \text{weight of teacher})}{(\text{number of students} + 1)}$



$$25 + 1 = \frac{1000 + x}{40+1}$$

$$26 = \frac{(1000 + x)}{41}$$

$$1066 = 1000 + x$$

$$x = 66 \text{ kg}$$

Therefore,

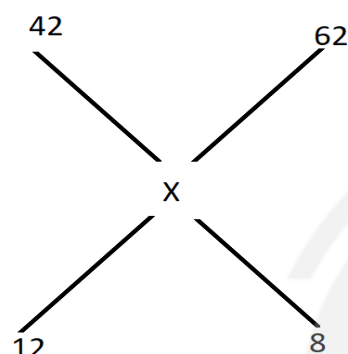
$$50\% \text{ of } x \text{ is } 33 \text{ kg} = 50\% \text{ of } x + 25$$

$$33 \text{ kg} + 25 \text{ kg} = 58 \text{ kg}$$

Q14 Text Solution:

Number of wickets taken in 1st match
 $= \frac{3}{5} \times 20 = 12$

Number of wickets taken in 2nd match
 $= 20 - 12 = 8$



By rule of allegation;

$$X = \frac{42 \times 12 + 62 \times 8}{20}$$

$$X = \frac{1000}{20}$$

$$X = 50$$

Q15 Text Solution:

Let the number of teachers in two groups be

$$\therefore 36x + 48y = 40(x + y)$$

$$\Rightarrow (48 - 40)y = (40 - 36)x$$

$$\Rightarrow 8y = 4x$$

$$\Rightarrow x : y = 8 : 4$$

$$= 2 : 1$$

Q16 Text Solution:

According to the question,

Total marks obtained by 12 students =

$$68 \times 12 = 816$$

Total marks obtained by $(12 - 3 + 1)$

$$\text{students} = 816 - (63 + 72 + 58) + 91$$

$$= 816 - 193 + 91 = 714$$

$$\text{New average marks} = \frac{714}{10} = 71.4$$

$$\text{Require percent} = \frac{71.4 - 68}{68} \times 100$$

$$= \frac{3.4}{68} \times 100 = 5\%$$

Option '5%' is the correct answer.

Q17 Text Solution:

Sum of the temperatures of all the 7 days =

$$7 \times \frac{227}{7} = 227^\circ\text{C}$$

So,

$$3x + 4(x - 1) = 227$$

$$3x + 4x - 4 = 227$$

$$x = 33$$

Sum of the temperatures of first three days = 3

$$\times 33 = 99^\circ\text{C}$$

Sum of the temperatures of first four days = 4 ×

$$34.5 = 138^\circ\text{C}$$

So, the temperature of Thu = $138 - 99 = 39^\circ\text{C} = (x + 6)^\circ\text{C}$

Q18 Text Solution:

Let the average weight of all five = 100k

So, weight of A = 90k, B = 112k and C = 94k

Let the weight of D = d and that of E = e

$$\frac{90k + 112k + 94k + d + e}{5} = 100k$$

$$d + e = 204k$$

$$d : e = 6 : 11$$

$$d = \frac{6}{17} \times 204 = 72k$$

$$e = 132k$$

$$\text{Difference} = 132k - 72k = 60k$$

$$60k = 75$$

$$\text{So, } k = \frac{75}{60} = 1.25$$

$$\text{Average weight of all the five persons} = 100 \times 1.25 = 125\text{kg}$$

Q19 Text Solution:

Sum of weight of 15 monkeys = $15 \times 35 = 525$

Sum of weight of first 6 monkeys = $6 \times 28 = 168$

Sum of weight of last monkeys = $6 \times 40 = 240$

$$\text{Weight of remaining monkeys} = (525 - 168 - 240) = 117 \text{ kg}$$

According to the question,

Let the weight of 8th monkey is x kg

Then weight of 7th monkey is $(x + 2.32)$ and

weight of 9th monkey is $(x + 3.47)$

So,

$$x + x + 2.32 + x + 3.47 = 117$$

$$3x + 5.79 = 117$$

$$3x = 111.21$$



(x = 37.07 kg)

$$\text{Required average} = \frac{(37.07 + 2.32) + (37.07 + 3.47)}{2}$$

= 39.965 kg

Q20 Text Solution:

Let he buy x oranges.

Total price of oranges = 50x rupees

100 orange were rotten

Actual price of 100 oranges = $100 \times 90 = 9000$

New price of 100 oranges = $100 \times 60 = 6000$

Total reduction = $9000 - 6000 = 3000$ rupees

Now, according to the question,

$$50x - 3000 = 45x$$

$$5x = 3000$$

x = 600 oranges

So, he buys $\frac{600}{12} = 50$ dozen oranges from the market.



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Level-3

Q1 Text Solution:

Initial total weight of the class = $32 \times 10x = 320x$ kg

New total weight of the class = $32 \times 98\frac{8}{9}\%$ of $10x = 32 \times \frac{89}{9}x$ kg

From the question:

$$320x + 40 - 56 = 32 \times \frac{89x}{9}$$

$$2880x - 144 = 2848x$$

$$x = 4.5$$

Now, the total number of students in another class = $10 \times 4.5 = 45$

Total weight of another class = 2160 kg

So, average weight of another class = $\frac{2160}{45} = 48$ kg

Q2 Text Solution:

Total weight of A + B + C + D = $4x$ kg ... (i)

When 'D' is replaced by 'E' then the average increases by 14.25 kg.

Therefore, A + B + C + E = $4 \times (x + 14.25) = (4x + 57)$ kg ... (ii)

Using (i) and (ii)

$$\Rightarrow 4x - D + E = 4x + 57$$

$$\Rightarrow E - D = 57 \dots (iii)$$

When 'C' is replaced by 'E', average increases by 6.75 kg.

Therefore, A + B + E + D = $4 \times (x + 6.75) = 4x + 27$... (iv)

Using (i) and (iv)

$$\Rightarrow 4x - C + E = 4x + 27$$

$$\Rightarrow E - C = 27 \dots (v)$$

The average weight of 'C', 'D' and 'E' is 74 kg.

Total weight of C + D + E = $74 \times 3 = 222$ kg ... (vi)

Using (iii), (v) and (vi)

$$\Rightarrow E - 27 + E - 57 + E = 222$$

$$\Rightarrow 3E = 306$$

$$\Rightarrow E = 102$$

$$\Rightarrow C = 102 - 27 = 75$$

$$\text{Required\%} = (27/75) \times 100 = 36\%$$

Q3 Text Solution:

Answer: **C**

Solution:-

Let there be n member (initially) in the Sharma family,

then the total earning of the family = Rs $98n$

Let the lowest earning in the family be Rs x

then the highest earning = Rs $(x+140)$

$$n \times 98 = (n-2) \times 96 + (2x + 140)$$

$$\Rightarrow n = x - 26 \quad (1)$$

For possible value of $x = 49, 56, 63, 70, 77, 84, 91, 98$

We have $n = 23, 30, 37, 44, 51, 58, 65, 72$

Required value of n are 23 and 37

Q4 Text Solution:

From the question:

$$x \times 72 - (x - 50) \times 48 = 5400$$

$$72x - 48x + 2400 = 5400$$

$$x = 125$$

Total ODIs played by him = 125

Total runs scored by him in ODIs = $125 \times 72 = 9000$

Total T-20s played by him = $125 - 50 = 75$

Total runs scored by him in T-20s = $75 \times 48 = 3600$

$$\text{Required average} = \frac{9000 + 3600}{125 + 75} = 63$$

Q5 Text Solution:

Difference between marks of Q and R ≥ 10

$$N + 2M - 2N - M \geq 10$$

$$M - N \geq 10$$

M and N are both distinct multiple of 10. So, minimum possible value of M and N is 20 and 10.

If value of M and N is 30 and 10.

Marks of P = $3 \times 30 + 2 \times 10 = 110 > 100$. This is not possible because marks of S is maximum (100).

$$\text{Marks of T} = \frac{1}{2} \times 100 = 50$$

$$10 + 2Y = 50$$

$$\text{Value of Y} = 20$$

$$\text{Required average} = \frac{3M + 2N + N + 2M + 2N + M + 100 + 50}{5} = \frac{320}{5}$$

$$= 64$$

$$\text{I. } 2(3M - 2N) - 4^2$$

$$\text{Required value} = 2 \times (3 \times 20 - 2 \times 10) - 16 = 64$$



This statement is follows

$$\text{II. } 3Y + 4$$

$$\text{Required value} = 3 \times 20 + 4 = 64$$

This statement is follows

$$\text{III. } 3(4N - Y) + 4^2$$

$$3 \times (4 \times 10 - 20) + 16 = 76$$

This statement doesn't follow.

So, Only I and II follows

Hence answer is option C

Q6 Text Solution:

Let there be n member (initially) in the family, then the total earning of the family = Rs $98n$

Let lowest earning in the family be Rs x then the highest earning = Rs $(x+140)$

$$n \times 98 = (n - 2) \times 96 + (2x + 140)$$

$$\Rightarrow n = x - 26$$

$$\text{or, } x = n + 26$$

For possible value of $x = 49, 56, 63, 70, 77, 84, 91, 98$

We have $n = 23, 30, 37, 44, 51, 58, 65, 72$

Required value of $n=23$ and 37

Q7 Text Solution:

Let the average cost price of articles 'A', 'B' and 'C' together = Rs. ' $100x$ '

Then, sum of cost price of all 3 articles = $100x \times 3$ = Rs. ' $300x$ '

Average cost price of articles 'A' and 'B' = Rs. $(100x + 100)$

Sum of cost price of articles 'A' and 'B' = $(100x + 100) \times 2$ = Rs. $(200x + 200)$

So, cost price of article 'C' = $300x - 200x - 200$ = Rs. $(100x - 200)$

Let the cost price of article 'A' = Rs. ' Y '

Then, cost price of article 'B' = Rs. $(Y + 1600)$

We have, $Y + Y + 1600 = 200x + 200$

$$\text{Or, } 2Y + 1600 = 200x + 200$$

$$\text{Or, } Y = (200x - 1400) \div 2 = \text{Rs. } (100x - 700)$$

So, cost price of articles 'A' and 'B' are Rs. $(100x - 700)$ and Rs. $(100x + 900)$, respectively

Selling price of article 'A' = $(100x - 700) \times 1.25 - 50 = 125x - 875 - 50 = \text{Rs. } (125x - 925)$

Selling price of article 'C' = $(100x - 200) \times 1.2 - 360 = 120x - 240 - 360 = \text{Rs. } (120x - 600)$

According to the question,

$$(125x - 925) : (120x - 600) = 11 : 12$$

$$\text{Or, } 1500x - 11100 = 1320x - 6600$$

$$\text{Or, } 180x = 4500$$

$$\text{So, } x = 25$$

And, cost price of article 'B' = $100x + 900 = \text{Rs. } 3,400$

So, required selling price of article 'B' = $3400 \times 1.15 = \text{Rs. } 3,910$

Hence, option c.

Q8 Text Solution:

Total weight of the class = $x \times y = xy$ kg

According to the question,

$$xy + 50 = (x + 1)(y + 1)$$

$$xy + 50 = xy + x + y + 1$$

$$x + y = 49$$

$$x = 49 - y \dots 1$$

Again, one student join the class,

$$xy + 50 + 50 = (x + 2)(y + 1.5)$$

$$xy + 100 = xy + 2y + 1.5x + 3$$

$$97 = 2y + 1.5x$$

Putting the value of x :

$$1.5(49 - y) + 2y = 97$$

$$73.5 - 1.5y + 2y = 97$$

$$0.5y = 23.5$$

$$y = 47$$

Putting the value of y in Equation 1

$$x = 49 - 47 = 2$$

(i) If Anant joins the class, the average weight of the class increases by 0.5 kg, find the weight of Anant.

Let the weight of Anant = a kg

According to the question,

$$(47 \times 2 + x) \div 3 = 47.5$$

$$94 + x = 142.5$$

$$x = 48.5 \text{ kg}$$

It can be found.

(ii) The number of students in the class.

The number of students in the class = 2

(iii) Find the value of $(y - 3x)$

$$(y - 3x) = (47 - 3 \times 2)$$

$$= 47 - 6 = 41$$

It can be found.

Hence, option b.



Q9 Text Solution:

For I:

Let, the number of students in the class is 'x'.

$$\text{So, } \frac{40 \times x + 5 \times 64 + 3 \times 98}{x+8} = 52.25$$

$$\text{Or, } 40x + 320 + 294 = 52.25x + 418$$

$$\text{Or, } 12.25x = 196$$

$$\text{Or, } x = 16$$

Since, $x < 36$

So, 'I' can be the answer.

For II:

Let, the number of students in the class is 'x'.

$$\text{So, } \frac{56 \times x + 5 \times 64 + 3 \times 98}{x+8} = 60.15$$

$$\text{Or, } 56x + 320 + 294 = 60.15x + 481.2$$

$$\text{Or, } 4.15x = 132.8$$

$$\text{Or, } x = 32$$

Since, $x < 36$

So, 'II' can be the answer.

For III:

Let, the number of students in the class is 'x'.

$$\text{So, } \frac{52 \times x + 5 \times 64 + 3 \times 98}{x+8} = 56.125$$

$$\text{Or, } 52x + 320 + 294 = 56.125x + 449$$

$$\text{Or, } 4.125x = 165$$

$$\text{Or, } x = 40$$

Since, $x > 36$

So, 'III' cannot be the answer.

Hence, option D.

Q10 Text Solution:

Sum of incomes of 'A' in 2019 and 2020 = 2×40000 = Rs. 80000

Let the income of 'A' in 2019 be Rs. x

Therefore, his income in 2020 = Rs. (80000 - x)

Savings of 'A' in given two years = Rs. 0.25x each

According to the question,

$$0.25x = 80000 - x - 40000$$

$$\text{Or, } 0.25x = 40000 - x$$

$$\text{Or, } 1.25x = 40000$$

$$\text{Or, } x = 32000$$

Therefore, expenditure of 'A' in 2019 = $0.75x$ = Rs. 24000

