

1. The average of 8, 9, 12, 13, 15, 9 is

- a. 7 b. 16.5
c. 16 d. 11

Solution: As average of the given terms should lie between lowest term and highest term, only option d satisfies. No need to calculate.

Conceptual way: Sum of terms/ No. of terms
= $66/6 = 11$

2. A has 8 pencils, B has 10 pencils and C has 15 pencils, then the average number of pencils with them are

- a. 8 b. 10
c. 15 d. lies between 9 and 15

Solution: Average number of pencils with all three students = Total with 3 students/Total students

$$= (8 + 10 + 15) / 3$$

$$= 11$$

3. The average age of 7 member of Patel's family is 25 year. The average age of the same family 3 year ago was

- a. 21 year b. 22 year
c. 25 year d. none of these

Solution: Present average age of family = 25 year
3 year ago average of family = $25 - 3 = 22$ years

Mind it: If each term is added/subtracted/multiplied by 'k', then average also gets added/subtracted/multiplied by 'k'.

4. The Average of 100, 200, 300, 400, ... , 1000 is 550. If each number is divided by 5, then the new average will be equal to

- a. 450 b. 45
c. 55 d. None of these

Solution: Actual average

$$= (100 + 220 + 300 + \dots + 1000) / 10$$

$$= 550$$

$$\text{New Average} = 550 / 5$$

$$= 110$$

As it 5 is positive, you can directly divide the average by 5.

5. A, B, C, D, E, F are the only six families in Indira Nagar. A, B, C, D, E and F has 7, 8, 10, 13, 6, and 10 member in their families respectively. If 1 member from all the six families left their respective families to accommodate themselves in the hostel of IIM Lucknow, then the average number of member now in each family of Indira nagar is

- a. 8 b. 9 c. 10 d. 13

Solution: Calculate the original average and then subtract one from average as each term is subtracted by 1.

6. The average salary of A, B is Rs.6000 and that of C, D and E is Rs. 8000. The average salary of all the 5 people is

- a. Rs.7200 b. Rs. 7000
c. Rs. 7500 d. can't be determined

Solution: Average salary of 5 people = Total Salary of five people/ no. of people

Required average salary:

$$= (6000 \times 2 + 8000 \times 3) / (2 + 3)$$

$$= 36000 / 5$$

$$= \text{Rs.}7200$$

7. The average salary of A, B and C is Rs.10,000 and average expenditure of A is Rs. 6000 then the average savings of B and C is

- a. Rs. 5500 b. Rs. 4500
c. Rs. 4000 d. can't be determined

Solution:

Total income = Total expenditure + Total savings

We are not given expenditure or savings of B and C and hence we can't determine average saving of both.

8. The average salary of all the 60 employees in an office is Rs. 12,000 per month. if the number of executives is twice the number of non executives employees, then the average salary of all the non executives employees is

- a. Rs. 9000 b. Rs. 8000
c. Rs. 6000 d. can't be determined

Solution: Let the non-executive people are x, executive employees will be 2x.

$x + 2x = 60$. So employees are 20 and 40 respectively.

Total salary = $40 \times \text{salary of executives} + 20 \times \text{salary of non-executives}$

$60 \times 12000 = 40 \times k + 20 \times l$, here k, l are unknowns so we can't determine the required average salary

9. A batsman has a certain average of runs for 14th innings. He scores 72 runs in the 15th innings, thus his average increased by 2. Find the average after 15th innings.

- a. 44 b. 46
c. 42 d. 48

Solution: Let the average of 14th innings = x

∴ Average of 15th innings = x+2

Then, $14x+72 = 15(x+2)$ --> Both sides represents total runs of 15 innings.

$$\Rightarrow 14x+72 = 15x+30$$

$$\therefore x = 42$$

∴ Average for 15th innings = x+2 = 42 + 2 = 44

Alternate thought: Out of 72 runs, 28 runs (14*2) are distributed to 14 innings. Now batsman left with 44 runs after doing this. This is what his current average!

10. The average salary of the entire staff in an office is ₹ 200 per day. The average salary of officers is ₹ 550 and that of non officers is ₹ 120. If the number of officers is 16, then find the number of non officers in the office.

- a. 72 b. 60
c. 70 d. 65

Solution: Let the number of non-officers be y. Then number of entire staff = 16 + y

$$\text{Sum of total salary} = 200(16 + y) = 16 \times 550 + 120y$$

$$\Rightarrow 120y + 550 \times 16 = 200 \times 16 + 200y$$

$$\Rightarrow 3y + 220 = 80 + 5y$$

$$\Rightarrow 2y = 140$$

$$\therefore y = 140/2 = 70$$

Quick Thought: Use Alligation

Officers	Non-officers
550	120
200	
80	350

Ratio of Officers to Non-officers = 80:350 or 8: 35

If officers are 16, non-officers must be 70 (2*35)

11. Eight members of a club donate Rs. 100 each towards a Relief Fund and the President of the club donates Rs. 50 more than the average donation of all (including President) of them. Then the contribution of the president is

- a. Rs.106.25 b. Rs. 156.25
c. Rs. 56.25 d. Rs. 206.25

Solution: Let the average of all 9 members be Rs. a.

Then president donates Rs. a + 50.

Also, 8 members donates a total of Rs. 800.

$$\text{Average of 9 members} = a = (800 + a + 50)/9$$

$$9a = 850 + a$$

$$8a = 850$$

$$a = 106.25$$

$$\text{Contribution of president is } 106.25 + 50 = 156.25$$

12. In a team of 10 persons, nine persons spent ₹40 each for their meal and the remaining one spent ₹9 more than the average expenditure of all the 10 persons. The total expenditure for their meal was

- a. ₹510 b. ₹310
c. ₹410 d. ₹610

Solution: Let the average of all 10 members be Rs. a.

Then remaining one donates Rs. a + 9.

Also, 9 members donates a total of Rs. 360.

$$\text{Average of 10 members} = a = (360 + a + 9)/10$$

$$10a = 369 + a$$

$$9a = 369$$

$$a = 41$$

$$\text{Expenditure of total 10 men is } 41 \times 10 = \text{Rs. 410.}$$

13. Out of the three annual examinations, each with a total of 500 marks, a student secured average marks of 45% and 55% in the first and second annual examinations. To have an overall average of 60%, how many marks does the student need to secure in the third annual examination?

- a. 450 b. 400
c. 350 d. 300

Solution: Total marks for three examinations = 3x 500 = 1500

Total required marks in three examinations = 60% of 1500 = 900

Marks secured in first examination = 45% of 500 = 225

Marks secured in third examination = 55 % of 500 = 275

Thus, the required marks in third examination

$$= 900 - (225 + 275)$$

$$= 900 - 500 = 400$$

14. The average age of women and child workers in a factory was 15 yr. The average age of all the 16 children was 8 yr and average age of women workers was 22 yr. If 10 women workers were married, then the number of unmarried women workers was.

- a. 16 b. 12
c. 8 d. 6

Solution: Let the number of women workers be Y.

Then, $22y + 16 \times 8 = 15 (16+y)$

(both sides give total age of all workers together)

$$\Rightarrow 22y + 128 = 240 + 15y$$

$$\Rightarrow 22y - 15y = 240 - 128$$

$$\therefore y = 16$$

$$\therefore \text{Unmarried women workers} = 16 - 10 = 6$$

15. In a class, there are 80 students and their average marks in the annual examination are 40. If the average marks of passed students are 60 and average marks of failed students are 35, then find out the number of students who failed.

- a. 63 b. 60
c. 72 d. 64

Solution: Let the number of failed student = Y

$$\therefore \text{Number of passed student} = 80 - Y$$

sum of marks of all students = sum of marks of passed students + sum of marks of failed students

$$80 \times 40 = (80 - Y) \times 60 + 35Y$$

$$\Rightarrow 3200 = 4800 - 60Y + 35Y$$

$$\Rightarrow 25Y = 1600$$

$$\therefore Y = 64$$

$$\therefore \text{Number of students who failed} = 64$$

Alternate Approach: Alligation

Passed Students		Failed Students
60		35
	40	
5	:	20

Ratio of passed students to failed students is 5: 20 or 1:4

$$x + 4x = 80 \text{ and } x = 16.$$

$$\text{So, Failed students} = 4 \times 16 = 64$$

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