

CAVALRY DEFENCE ACADEMY (CDA) DEHRADUN - 8381042191

AVERAGE

Average of given numbers is equal to the sum of given numbers divided by total number of numbers Or, Average of given observations is equal to the sum of total observations divided by number of observations.

☞ Rule (1) Average of given numbers
$$= \frac{\text{Sum of given numbers}}{\text{Total number of given numbers}}$$

☞ Rule (2) Or, Average given observations
$$= \frac{\text{Sum of observations}}{\text{Number of observations}}$$

☞ Rule (3) Average of Squares of first n Natural Numbers $= (n+1)(2n+1)/6$

☞ Rule (4) Average of Consecutive Numbers or Average of n Numbers in arithmetic sequence
$$= \frac{\text{First number} + \text{Last number}}{2}$$

☞ Rule (5) **Calculation of average of even or odd numbers, Important rules**

- (a) Average of 'n' first consecutive odd number Or
$$= n$$
- (b) Average of Square of first 'n' even numbers
$$= \frac{2(n+1)(2n+1)}{3}$$
- (c) Average of first n even numbers Or Average of consecutive even numbers
$$= n + 1$$
- (d) Average of Square of first 'n' even numbers
$$= \frac{4n^2 - 1}{3} \text{ or } \{2(n+1)(2n+1)/3\}$$
- (e) Average of 1 to "n" odd numbers (Average of consecutive odd numbers)
$$= \frac{\text{Last odd number} + 1}{2}$$
- (f) Average of 1 to "n" even numbers (Average of consecutive odd numbers)
$$= \frac{\text{Last even number} + 2}{2}$$

☞ Rule (6) **Calculation of average speed –**

- (a) Average Speed $= \frac{\text{Total distance covered}}{\text{total time taken}}$
- (b) Let a person covers a distance at a speed of x km/h and again covers the same distance at a speed of y km/h. **Then average speed $= 2xy/x+y$ km/h**
- (c) Let a person covers three equal distance at a speed of x km/h, y km/h, and z km/hr respectively **then the average speed during the whole journey $= 3xyz/x+y+z$ km/h**

☞ Rule (7) **Tricks subject to certain conditions:**

- (a) When a person leaves a group and another person replaces him, then two cases arise:



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Case I : When the average age increases then, age of new comer
= Age of person who left + no. of persons in the group x increase in average age

Case II: When the average age decreases then, age of the new comer
= Age of the person who left - No of persons in the group x decrease in average age

(b) When a person joins a group without any replacement, then two cases arise.

Case I: When the average age increases, then age of the new comer
= Previous average (when the new comer is not available) of ages + No. of all persons (including the new comer) x increase in average value.

Case II : When the average age decreases then, age of the new comer
= Previous average age - No. of all persons including new comer x decrease in average value.)

Question from CDA

Question 1. A batsman in his 17th innings makes a score of 85 and their by increasing his average by 3. What is his average after the 17th innings?

- a. 34
- b. 35
- c. 36
- d. 37.

Question 2. A batsman makes a score of 64 runs in the 16th innings and thus increased his average by 3. Find his average after the 16th inning?

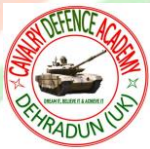
- a. 17
- b. 18
- c. 19.
- d. 20

Question 3. In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach the target of 282 runs?

- a. 5.75
- b. 6.25.
- c. 6.75
- d. 7.25

Question 4. The average weight of 8 person's increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. What might be the weight of the new person?

- a. 70
- b. 80
- c. 85
- d. 90



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Dream it, Believe it &
Achieve it