

AVERAGE

Key Points:

1) An average or arithmetic mean of given data is the sum of the given observations divided by the number of observations.

For example : If we have to find out the average of 10, 15, 25 and 30, then required average will be equal to:

$$\frac{10+15+25+30}{4} = \frac{80}{4} = 20.$$

Therefore, we can say, Average (A) = $\frac{\text{Sum of the given observations (S)}}{\text{Number of Observations (N)}}$

2) If all the numbers increase by 'a' then the average of the numbers will also increase by 'a'.

3) If all the numbers decrease by 'a' then the average of the numbers will also decrease by 'a'.

4) If all the numbers are multiplied by 'a' then their average must also be multiplied by 'a'.

5) If all the numbers are divided by 'a' then their average must also be divided by 'a'.

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

7) Average of first n even numbers = $(n+1)$

8) Average of first n odd numbers = n

9) Average of consecutive numbers = $\frac{\text{First number} + \text{Last number}}{2}$

10) Average of 1 to n odd numbers = $\frac{\text{Last odd number} + 1}{2}$

11) Average of 1 to n even numbers = $\frac{\text{Last even number} + 2}{2}$

12) Average of squares of first n natural numbers = $\frac{(n+1)(2n+1)}{6}$

13) Average of cubes of first n natural numbers = $\frac{n(n+1)^2}{4}$

14) Average of n multiples of any number = $\frac{\text{number} \times (n+1)}{2}$

Variety Questions

Q.1. The average monthly salary of 60 employees of a factory is Rs.29900. If two officers are getting Rs.90,000 each and the average salary of 8 supervisors is Rs.65,000, then what is the average salary (in Rs.) of the remaining employees?

SSC CGL 20/8/2021 (Afternoon)

- (a) 21080 (b) 22680
(c) 29080 (d) 21880

Q.2. In an examination, the average score of a student was 67.6. If he would have got 27 more marks in Mathematics, 10 more marks in Computer Science, 18 more marks in History and retained the same marks in other subjects, then his average score would have been 72.6. How many papers were there in the examination?

SSC CGL 23/8/2021 (Morning)

- (a) 11 (b) 10 (c) 12 (d) 9

Q.3. The average weight of students of section A and B having 40 students each is 45.5 kg and 44.2 kg respectively. Two students of section A having average weight 48.75 kg were shifted to section B and 2 students of section B were shifted to section A, making the average weight of both the sections equal. What is the average weight (in kg) of the students who were shifted from section B to section A?

SSC CGL 23/8/2021 (Afternoon)

- (a) 34.5 (b) 35
(c) 35.75 (d) 34.25

Q.4. What is the average of numbers from 1 to 50 which are multiples of 2 or 5? (correct to one decimal place)

SSC CGL 24/8/2021 (Evening)

- (a) 25.4 (b) 25.9
(c) 26.4 (d) 25.8

Q.5. What is the ratio of the average of first eight prime numbers to the average of first ten even natural numbers?

SSC CGL 16/8/2021 (Afternoon)

- (a) 1 : 7 (b) 7 : 80
(c) 8 : 70 (d) 7 : 8

Q.6. The numbers 2, 3, 4 and 5 occur $(2+5k)$, $(5k-7)$, $(2k-3)$ and $(k+2)$ times, respectively. The average of the number is 2.85. Later on, the number 2 was replaced by 6 in all the places. What is the average of the new numbers?

SSC CHSL 5/8/2021 (Evening)

- (a) 2.4 (b) 5.25
(c) 3.85 (d) 4.75

Q.7. x, y and z are three positive numbers such that y is $\frac{4}{5}$ times of x and z is $\frac{3}{8}$ times of y. If the average of reciprocals of the numbers x, y and z is $\frac{17}{240}$, then the average of 3 times of x and 5 times of y will be:

SSC CHSL 10/8/2021 (Afternoon)

- (a) 70 (b) 60 (c) 40 (d) 45

Q.8. The average of the numbers a, b, c and d is $2d-4$. Also, the averages of the numbers a and b: b and c: c and d are 8, 5 and 4, respectively. If $e = a+d+1$, then what is the average of the numbers d and e?

SSC CHSL 13/4/2021 (Evening)

- (a) 8 (b) 8.5 (c) 3 (d) 7

Q.9. If the average of the 3-digit numbers 335, $2x5$, $x35$, $63x$ and 406 is 411, then what will be the average of $(x-1)$, $(x-3)$, $(x+3)$ and $(x+5)$?

SSC CHSL 16/4/2021 (Afternoon)

- (a) 6 (b) 3 (c) 5 (d) 4

Q.10. The average weight of a group of 3 people A, B and C is 70 kg. When D joins this group, the average becomes 60 kg. One man E whose weight is 5 kg more than that of D, replaces A and the average weight of B, C, D and E now becomes 59kg A's weight (in kg) is:

SSC CPO-2019 23-11-2020 (Evening shift)

- (a) 50 (b) 40 (c) 39 (d) 59

Q.11. The average of 35 consecutive natural numbers is N. Dropping the first