

# 5

## AVERAGE

**Importance :** Concept of average is a basic concept of arithmetic and is important to solve many chapters. Specially 'average' questions are regularly asked in different competitive exams.

**Scope of questions :** Asked questions include Average age, Average income, Average marks/distance, arithmetic means of numbers, increase/decrease in average, minimum/maximum scope/quantity/number for certain average. Tabulation based/frequency based arithmetic means are also asked.

**Way to success :** Complete practice, Full concentration, Accuracy, speed and Rechecking are must for 'Average' formulae. Do calculations with care.

**Rule 1 :** Average of two or more numbers/quantities is called the mean of these numbers, which is given by

$$\text{Average(A)} = \frac{\text{Sum of observation / quantities}}{\text{No. of observation / quantities}}$$

$$\therefore S = A \times n$$

OR

$$\text{Average of numbers} = \frac{x_1 + x_2 + \dots + x_n}{n}$$

$$\text{or, Average} = \frac{\sum_{i=1}^n x_i}{n}$$

**Rule 2 :** If the given observations (x) are occurring with certain frequency (A) then,

$$\text{Average} = \frac{A_1x_1 + A_2x_2 + \dots + A_nx_n}{x_1 + x_2 + \dots + x_n}$$

where,  $A_1, A_2, A_3, \dots, A_n$  are frequencies

**Rule 3 :** The average of 'n' consecutive natural numbers starting from 1 i.e. Average of 1, 2, 3, .....n =  $\frac{n+1}{2}$

**Rule 4 :** The average of squares of 'n' consecutive natural numbers starting from 1 i.e.

$$\text{Average of } 1^2, 2^2, 3^2, 4^2 \dots x^2 = \frac{(n+1)(2n+1)}{6}$$

**Rule 5 :** The average of cubes of first 'n' consecutive natural numbers i.e. Average of  $1^3, 2^3, 3^3 \dots n^3 = \frac{n(n+1)^2}{4}$

**Rule 6 :** The average of first 'n' consecutive even natural numbers i.e. Average of 2, 4, 6, .....  $2n = (n+1)$

**Rule 7 :** The average of first 'n' consecutive odd natural numbers i.e. 1, 3, 5, .....  $(2n-1) = n$

**Rule 8 :** The average of certain consecutive numbers a, b, c, ..... n is  $\frac{a+n}{2}$

**Rule 9 :** The average of 1st 'n' multiples of certain numbers x =  $\frac{x(1+n)}{2}$

**Rule 10 :** If the average of ' $n_1$ ' numbers is  $a_1$  and the average of ' $n_2$ ' numbers is  $a_2$ , then average of total numbers  $n_1$  and  $n_2$  is Average =  $\frac{n_1a_1 + n_2a_2}{n_1 + n_2}$

**Rule 11 :** If A goes from P to Q with speed x km/h and returns from Q to P with speed y km/h, then the average speed of total journey is

$$\text{Average speed} = \frac{2xy}{x+y} = \frac{\text{total distance}}{\text{total time taken}}$$

**Rule 12 :** If a distance is travelled with three different speeds a km/h, b km/h and c km/h, then

$$\text{Average speed of total journey} = \frac{3abc}{ab+bc+ca} \text{ km/h}$$

**Rule 13 :** If the average of m numbers is x and out of these 'm' numbers the average of n numbers is y. (or vice versa) then the average of remaining numbers will be



**AVERAGE**

(i) Average of remaining numbers

$$= \frac{mx - ny}{m - n} \quad (\text{if } m > n)$$

(ii) Average of remaining numbers

$$= \frac{ny - mx}{n - m} \quad (\text{if } n > m)$$

**Rule 14 :** In three numbers, if 1st number is 'a' times of 2nd number and 'b' times of 3rd number and the average

of all three numbers is x, then 1st number =  $\frac{3ab}{a + b + ab} \times x$ .

**Rule 15 :** From three numbers, first number is 'a' times of 2nd number, 2nd number is 'b' times of 3rd number and the average of all three numbers is x, then,

$$\text{First number} = \frac{3ab}{1 + b + ab} \times x$$

$$\text{Second number} = \frac{3b}{1 + b + ab} \times x$$

$$\text{Third number} = \frac{3b}{1 + b + ab} \times x$$

**Rule 16 :** If from (n + 1) numbers, the average of first n numbers is 'F' and the average of last n numbers is 'L', and the first number is 'f' and the last number is 'l' then  $f - l = n(F - L)$

**Rule 17 :** 't' years before, the average age of N members of a family was 'T' years. If during this period 'n' children increased in the family but average age (present) remains same, then,

$$\text{Present age of } n \text{ children} = n.T - N.t$$

**Rule 18 :** If in the group of N persons, a new person comes at the place of a person of 'T' years, so that average age, increases by 't' years

$$\text{Then, the age of the new person} = T + N.t$$

If the average age decreases by 't' years after entry of new person, then the age of the new person =  $T - N.t$

**Rule 19 :** The average age of a group of N students is 'T' years. If 'n' students join, the average age of the group increases by 't' years, then Average age of new students

$$= T + \left( \frac{N}{n} + 1 \right) t$$

If the average age of the group decreases by 't' years, then

$$\text{Average age of new students} = T - \left( \frac{N}{n} + 1 \right) t$$

**Rule 20 :** If the average of 'n' observations is 'x' and from these the average of 1st 'm' observations is 'y' and the average of last 'm' observations is 'z' then

$$m\text{th observation} = m(y + z) - nx$$

$$(m + 1)\text{th observation} = nx - m(y + z)$$

**Rule 21 :** If the average age (height) of 'n' persons is x year (cms) and from them 'm' persons went out whose average age (height) is 'y' years (cms) and same number of persons joined whose average age (height) is 'z' years (cms) then what is the average age (height) of n persons ?

$$\therefore \text{Average age} = \left\{ x - \frac{m(y - z)}{n} \right\} \text{ years (cms).}$$

$$\text{Rule 22 : Average of bowler} = \frac{\text{Total runs}}{\text{No. of wickets}}$$

$\therefore$  Total runs = Average (A). y, where y = Number of wickets.

**Rule 23 :** If in a group, one member is replaced by a new member, then,

$$\text{Age of new member} = (\text{age of replaced member}) \pm xn$$

where, x = increase (+) or decrease (-) in average  
 n = Number of members.

**Rule 24 :** If a new member is added in a group then,

$$\text{age (or income) of added member} = \text{Average (or income)} \pm x(n + 1)$$

where x = increase (+) or decrease (-) in average age (or income)  
 n = Number of members.

**Rule 25 :** If a member leaves the group, then

$$\text{income (or age) of left member} = \text{Average income (or age)} \pm x(n - 1)$$

where, x = increase (+) or decrease (-) in average income (or age)  
 n = Number of members.

**Rule 26 :** If average of n numbers is m later on it was found that a number 'a' was misread as 'b'. The correct

$$\text{average will be} = m + \frac{(a - b)}{n}$$

**Rule 27 :** If the average of n numbers is m later on it was found that two numbers a and b misread as p and q.

$$\text{The correct average} = m + \frac{(a + b - p - q)}{n}$$

□□□



## QUESTIONS ASKED IN PREVIOUS SSC EXAMS

### TYPE-I

1. A student was asked to find the arithmetic mean of the following 12 numbers :

3, 11, 7, 9, 15, 13, 8, 19, 17, 21, 14 and x

He found the mean to be 12. The value of x will be :

- (1) 3                      (2) 7  
 (3) 17                    (4) 31

(SSC CGL Prelim Exam. 04.07.1999  
 (First Sitting))

2. The average of the marks obtained in an examination by 8 students was 51 and by 9 other students was 68. The average marks of all 17 students was :

- (1) 59                      (2) 59.5  
 (3) 60                      (4) 60.5

(SSC CGL Prelim Exam. 04.07.1999  
 (First Sitting))

3. If the average marks of three batches of 55, 60 and 45 students respectively is 50, 55 and 60, then the average marks of all the students is

- (1) 54.68                  (2) 53.33  
 (3) 55                      (4) None of these

(SSC CPO S.I. Exam. 12.01.2003)

4. The average of 30 results is 20 and the average of other 20 results is 30. What is the average of all the results ?

- (1) 24                      (2) 48  
 (3) 25                      (4) 50

(SSC CGL Prelim Exam. 11.05.2003  
 (First Sitting))

5. If the average weight of 6 students is 50 kg; that of 2 students is 51 kg; and that of other 2 students is 55 kg; then the average weight of all students is

- (1) 61 kg                  (2) 51.5 kg  
 (3) 52 kg                  (4) 51.2 kg

(SSC CGL Prelim Exam. 04.02.2007  
 (Second Sitting))

6. The average of 10 numbers is 7. If each number is multiplied by 12, then the average of the new set of numbers will be

- (1) 7                        (2) 19  
 (3) 82                      (4) 84

(SSC CGL Prelim Exam. 04.02.2007  
 (Second Sitting))

7. The average income of 40 persons is ₹ 4200 and that of another 35 persons is ₹ 4000. The average income of the whole group is :

- (1) ₹ 4100                  (2) ₹ 4106  $\frac{1}{3}$

- (3) ₹ 4106  $\frac{2}{3}$               (4) ₹ 4108  $\frac{1}{3}$

(SSC CGL Prelim Exam. 04.07.1999  
 (Second Sitting))

8. The average weight of five persons sitting in a boat is 38 kg. The average weight of the boat and the persons sitting in the boat is 52kg. What is the weight of the boat ?

- (1) 228 kg                  (2) 122 kg  
 (3) 232 kg                  (4) 242 kg

FCI Assistant Grade-III  
 Exam.05.02.2012 (Paper-I)  
 East Zone (IInd Sitting)

9. The average marks of 32 boys of section A of class X is 60 whereas the average marks of 40 boys of section B of class X is 33. The average marks for both the sections combined together is

- (1) 44                      (2) 45

- (3) 46  $\frac{1}{2}$                       (4) 45  $\frac{1}{2}$

(SSC Data Entry Operator  
 Exam. 02.08.2009)

10. Total weekly emoluments of the workers of a factory is ₹ 1534. Average weekly emolument of a worker is ₹ 118. The number of workers in the factory is :

- (1) 16                      (2) 14  
 (3) 13                      (4) 12

(SSC CHSL DEO & LDC  
 Exam. 27.11.2010)

11. 12 kg of rice costing ₹ 30 per kg is mixed with 8 kg of rice costing ₹ 40 per kg. The average per kg price of mixed rice is

- (1) ₹ 38                      (2) ₹ 37  
 (3) ₹ 35                      (4) ₹ 34

(SSC CHSL DEO & LDC  
 Exam. 28.11.2010 (1st Sitting))

12. If average of 20 observations  $x_1, x_2, \dots, x_{20}$  is y, then the average of  $x_1 - 101, x_2 - 101, x_3 - 101, \dots, x_{20} - 101$  is

- (1) y - 20                  (2) y - 101  
 (3) 20y                      (4) 101y

(SSC CISF Constable (GD)  
 Exam. 05.06.2011)

13. The average of x numbers is y and average of y numbers is x. Then the average of all the numbers taken together is

- (1)  $\frac{x+y}{2xy}$                   (2)  $\frac{2xy}{x+y}$

- (3)  $\frac{x^2+y^2}{x+y}$               (4)  $\frac{xy}{x+y}$

(SSC CHSL DEO & LDC Exam.  
 04.12.2011 (1st Sitting (East Zone))

14. The average of x numbers is  $y^2$  and the average of y numbers is  $x^2$ . So the average of all the numbers taken together is

- (1)  $\frac{x^3+y^3}{x+y}$                   (2) xy

- (3)  $\frac{x^2+y^2}{x+y}$               (4)  $xy^2 + yx^2$

(SSC CHSL DEO & LDC Exam.  
 04.12.2011 (IInd Sitting (East Zone))

15. The average of n numbers  $x_1, x_2, \dots, x_n$  is  $\bar{x}$ . Then the value

of  $\sum_{i=1}^n (x_i - \bar{x})$  is equal to

- (1) n                        (2) 0  
 (3)  $n\bar{x}$                       (4)  $\bar{x}$

(SSC CHSL DEO & LDC Exam.  
 11.12.2011 (1st Sitting (Delhi Zone))

16. A man bought 13 articles at ₹ 70 each, 15 at ₹ 60 each and 12 at ₹ 65 each. The average price per article is

- (1) ₹ 60.25                  (2) ₹ 64.75  
 (3) ₹ 65.75                  (4) ₹ 62.25

(SSC Constable (GD) & Rifleman  
 (GD) Exam. 22.04.2012 (1st Sitting))



**AVERAGE**

- 17.** A library has an average number of 510 visitors on Sunday and 240 on other days. The average number of visitors per day in a month of 30 days beginning with Sunday is :

(1) 285                      (2) 295  
 (3) 300                      (4) 290

(SSC CHSL DEO & LDC Exam.  
21.10.2012 (IInd Sitting))

- 18.** The average of 30 numbers is 40 and that of other 40 numbers is 30. The average of all the numbers is

(1)  $34\frac{2}{7}$                       (2) 35  
 (3) 34                      (4) 34.5

(SSC CHSL DEO & LDC  
Exam. 20.10.2013)

- 19.** The average of 20 numbers is 15 and the average of first five is 12. The average of the rest is

(1) 16                      (2) 15  
 (3) 14                      (4) 13

(SSC Graduate Level Tier-I  
Exam. 19.05.2013)

- 20.** The average monthly expenditure of a family is ₹2,200 during first three months, ₹2,550 during next four months and ₹3,120 during last five months of the year. If the total savings during the year was ₹1,260, what is the average monthly income ?

(1) ₹ 1,260                      (2) ₹ 1,280  
 (3) ₹ 2,805                      (4) ₹ 2,850

(SSC Graduate Level Tier-I  
Exam. 11.11.2012, Ist Sitting)

- 21.** Find the average of 1.11, 0.01, 0.101, 0.001, 0.11

(1) 0.2664                      (2) 0.2554  
 (3) 0.1264                      (4) 0.1164

(SSC Multi-Tasking Staff Exam.  
10.03.2013, Ist Sitting : Patna)

- 22.** 4 boys and 3 girls spent ₹ 120 on the average, of which boys spent ₹ 150 on the average. Then the average amount spent by the girls is

(1) ₹ 80                      (2) ₹ 60  
 (3) ₹ 90                      (4) ₹ 100

(SSC Multi-Tasking Staff Exam.  
10.03.2013, Ist Sitting : Patna)

- 23.** Six tables and twelve chairs were bought for ₹ 7,800. If the average price of a table is ₹ 750, then the average price of a chair would be

(1) ₹ 250                      (2) ₹ 275  
 (3) ₹ 150                      (4) ₹ 175

(SSC Multi-Tasking Staff  
Exam. 17.03.2013, Ist Sitting)

- 24.** Out of 20 boys, 6 are each of 1 m 15 cm height, 8 are of 1 m 10 cm and rest of 1 m 12 cm. The average height of all of them is

(1) 1 m 12.1 cm  
 (2) 1 m 21.1 cm  
 (3) 1 m 21 cm  
 (4) 1 m 12 cm

(SSC Multi-Tasking Staff  
Exam. 17.03.2013, IInd Sitting)

- 25.** There are two groups A and B of a class, consisting of 42 and 28 students respectively. If the average weight of group A is 25 kg and that of group B is 40 kg, find the average weight of the whole class.

(1) 69 kg                      (2) 31 kg  
 (3) 70 kg                      (4) 30 kg

(SSC FCI Assistant Grade-III Main  
Exam. 07.04.2013)

- 26.** The average monthly salary of all the employees in an industry is ₹ 12,000. The average salary of male employees is ₹ 15,000 and that of female employees is ₹ 8,000. What is the ratio of male employees to female employees ?

(1) 5 : 2                      (2) 3 : 4  
 (3) 4 : 3                      (4) 2 : 5

(SSC FCI Assistant Grade-III Main  
Exam. 07.04.2013)

- 27.** The mean of 9 observations is 16. One more observation is included and the new mean becomes 17. The 10th observation is

(1) 9                      (2) 16  
 (3) 26                      (4) 30

(SSC CISF ASI  
Exam 29.08.2010 (Paper-1))

- 28.** The average of 8 numbers is 27. If each of the numbers is multiplied by 8, find the average of new set of numbers.

(1) 1128                      (2) 938  
 (3) 316                      (4) 216

(SSC Constable (GD)  
Exam. 12.05.2013 Ist Sitting)

- 29.** The average of 100 numbers is 44. The average of these 100 numbers and 4 other new numbers is 50. The average of the four new numbers will be

(1) 800                      (2) 200  
 (3) 176                      (4) 24

(SSC CGL Prelim Exam. 04.02.2007  
(First Sitting))

- 30.** The average of 30 numbers is 15. The average of the first 18 numbers is 10 and that of the next 11 numbers is 20. The last number is

(1) 56                      (2) 52  
 (3) 60                      (4) 50

(SSC Section Officer (Commercial Audit)  
Exam. 30.09.2007 (Second  
Sitting))

- 31.** The arithmetic mean of the following numbers

1, 2, 2, 3, 3, 3, 4, 4, 4, 4, 5, 5,  
5, 5, 5, 6, 6, 6, 6, 6, 6 and 7, 7,  
7, 7, 7, 7, 7 is

(1) 4                      (2) 5  
 (3) 14                      (4) 20

(SSC CGL Tier-II Exam. 21.09.2014)

- 32.** The average of all the numbers between 6 and 50 which are divisible by 5 is

(1) 27.5                      (2) 30  
 (3) 28.5                      (4) 22

(SSC CAPFs SI, CISF ASI & Delhi  
Police SI Exam. 22.06.2014)

- 33.** There are 100 students in 3 sections A, B and C of a class. The average marks of all the 3 sections was 84. The average of B and C was 87.5 and the average marks of A is 70. The number of students in A was

(1) 30                      (2) 35  
 (3) 20                      (4) 25

(SSC CGL Tier-I Exam. 19.10.2014  
TF No. 022 MH 3)

- 34.** The average weight of first 11 persons among 12 persons is 95 kg. The weight of 12th person is 33 kg more than the average weight of all the 12 persons. The weight of the 12th person is

(1) 128.75 kg                      (2) 128 kg  
 (3) 131 kg                      (4) 97.45 kg

(SSC CGL Tier-II Exam. 12.04.2015  
TF No. 567 TL 9)





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- 35.** The average weight of A, B and C is 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43 kg, then the weight (in kg) of B is

(1) 20                      (2) 26  
 (3) 31                      (4) 17

(SSC CGL Tier-II Exam, 2014 12.04.2015  
 (Kolkata Region)  
 TF No. 789 TH 7)

- 36.** The average of some natural numbers is 15. If 30 is added to first number and 5 is subtracted from the last number the average becomes 17.5 then the number of natural number is

(1) 15                      (2) 30  
 (3) 20                      (4) 10

(SSC CAPFs SI, CISF ASI & Delhi  
 Police SI Exam, 21.06.2015  
 (1st Sitting) TF No. 8037731)

- 37.** The average weight of 3 men A, B and C is 84 kg. Another man D joins the group and the average now becomes 80 kg. If another man E whose weight is 3 kg more than that of D, replaces A, then the average weight of B, C, D and E becomes 79 kg. Then weight of A is

(1) 72 kg.                      (2) 74 kg.  
 (3) 75 kg.                      (4) 76 kg.

(SSC CAPFs SI, CISF ASI & Delhi  
 Police SI Exam, 21.06.2015  
 IInd Sitting and SSC CGL Tier-I  
 Exam, 16.08.2015  
 (IInd Sitting) TF No. 2176783)

- 38.** The average weight of 15 oarsmen in a boat is increased by 1.6 kg when one of the crew, who weighs 42 kg is replaced by a new man. Find the weight of the new man (in kg).

(1) 67                      (2) 65  
 (3) 66                      (4) 43

(SSC CGL Tier-I Exam, 09.08.2015  
 (1st Sitting) TF No. 1443088)

- 39.** A librarian purchased 50 story-books for his library. But he saw that he could get 14 more books by spending Rs. 76 more and the average price per book would be reduced by Re. 1. The average price (in Rs.) of each book he bought, was :

(1) 15                      (2) 10  
 (3) 25                      (4) 20

(SSC CGL Tier-I Exam, 16.08.2015  
 (IInd Sitting) TF No. 2176783)

- 40.** The average of 1, 3, 5, 7, 9, 11, ..... to 25 terms is

(1) 125                      (2) 25  
 (3) 625                      (4) 50

(SSC Constable (GD)  
 Exam, 04.10.2015, 1st Sitting)

- 41.** Six friends have an average height of 167 cms. A boy with height 162 cm leaves the group. Find the new average height.

(1) 168 cm                      (2) 166 cm  
 (3) 169 cm                      (4) 167 cm

(SSC Constable (GD)  
 Exam, 04.10.2015, IInd Sitting)

- 42.** The average weight of 8 persons increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. The weight of the new person is

(1) 84 kg                      (2) 85 kg  
 (3) 76 kg                      (4) 76.5 kg

(SSC Constable (GD)  
 Exam, 04.10.2015, IInd Sitting)

- 43.** Three Science classes A, B and C take a Life Science test. The average score of class A is 83. The average score of class B is 76. The average score of class C is 85. The average score of class A and B is 79 and average score of class B and C is 81. Then the average score of classes A, B and C is

(1) 81.5                      (2) 81  
 (3) 80.5                      (4) 80

(SSC CGL Tier-II Exam,  
 25.10.2015, TF No. 1099685)

- 44.** The mean high temperature of the first four days of a week is 25°C whereas the mean of the last four days is 25.5°C. If the mean temperature of the whole week is 25.2°C then the temperature on the 4th day is

(1) 25.5°C                      (2) 25°C  
 (3) 25.2°C                      (4) 25.6°C

(SSC CHSL (10+2) LDC, DEO & PA/SA  
 Exam, 01.11.2015, IInd Sitting)

- 45.** The average marks of 50 students in a class is 72. The average marks of boys and girls in that subject are 70 and 75 respectively. The number of boys in the class is

(1) 20                      (2) 35  
 (3) 25                      (4) 30

(SSC CHSL (10+2) LDC, DEO  
 & PA/SA Exam, 20.12.2015  
 (1st Sitting) TF No. 9692918)

- 46.** The average marks obtained by a class of 60 students is 65. The average marks of half of the students is found to be 85. The average marks of the remaining students is

(1) 35                      (2) 45  
 (3) 55                      (4) 65

(SSC CGL Tier-I (CBE) Exam, 10.09.2016)

- 47.** The average of marks obtained by 100 candidates in a certain examination is 30. If the average marks of passed candidates is 35 and that of the failed candidates is 10, what is the number of candidates who passed the examination?

(1) 60                      (2) 70  
 (3) 80                      (4) 90

(SSC CGL Tier-I (CBE)

Exam, 11.09.2016) (1st Sitting)

- 48.** The average weight of A, B and C is 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43 kg, then the weight of B is :

(1) 31 kg.                      (2) 32 kg.  
 (3) 29.5 kg.                      (4) 35 kg.

(SSC CGL Tier-II Online

Exam, 01.12.2016)

- 49.** The average of 25 results is 20. The average of first 12 results is 15 and that of the last 12 results is 18. Then, the 13th result is :

(1) 100                      (2) 101  
 (3) 104                      (4) 103

(SSC CPO Exam, 06.06.2016)

(1st Sitting)

- 50.** The average of 100 observations was calculated as 35. It was found later, that one of the observations was misread as 83 instead of 53. The correct average is :

(1) 32.7                      (2) 34.7  
 (3) 35.7                      (4) 36.7

(SSC CHSL (10+2) Tier-I (CBE)

Exam, 08.09.2016) (1st Sitting)

- 51.** If the difference between the average of  $x, y$  and  $y, z$  is 12, then the difference between  $x$  and  $z$  is :

(1) 24                      (2) 48  
 (3) 12                      (4) 6

(SSC CAPFs (CPO) SI & ASI,

Delhi Police Exam, 20.03.2016)

(IInd Sitting)

- 52.** The average of the first 7 integers in a series of 13 consecutive odd integers is 37. What is the average of the entire series?

(1) 37                      (2) 39  
 (3) 41                      (4) 43

(SSC CAPFs (CPO) SI & ASI,

Delhi Police Exam, 05.06.2016)

(1st Sitting)



**AVERAGE**

- 53.** The average marks of a class of 35 children is 35. The marks of one of the students, who got 35, was incorrectly entered as 65. What is the correct average of the class?

(1) 33.76            (2) 34.14  
(3) 35.24            (4) 36.50

(SSC CAPFs (CPO) SI & ASI,  
Delhi Police Exam. 05.06.2016)  
(1st Sitting)

- 54.** The average height of 30 boys out of a class of 50 is 160 cm. If the average height of the remaining boys is 165 cm, the average height of the whole class (in cm) is :

(1) 161                (2) 162  
(3) 163                (4) 164

(SSC CGL Tier-I (CBE)  
Exam. 27.08.2016) (1st Sitting)

- 55.** The average of marks of 17 students in an examination was calculated as 71. But it was later found that the mark of one student had been wrongly entered as 65 instead of 56 and another as 24 instead of 50. The correct average is

(1) 70                (2) 71  
(3) 72                (4) 73

(SSC CGL Tier-I (CBE)  
Exam. 31.08.2016) (1st Sitting)

- 56.** The average of 12 numbers is 9. If each number is multiplied by 2 and added to 3, the average of the new set of numbers is

(1) 9                  (2) 18  
(3) 21                (4) 27

(SSC CGL Tier-I (CBE)  
Exam. 01.09.2016) (1st Sitting)

- 57.** The average of 20 numbers is calculated as 35. It is discovered later on that while calculating the average, one number, namely 85, was mis read as 45. The correct average is :

(1) 36                (2) 36.5  
(3) 37                (4) 37.5

(SSC CGL Tier-I (CBE)  
Exam. 28.08.2016) (1st Sitting)

- 58.** The average of  $a$ ,  $b$  and  $c$  is 20 and that of  $b$ ,  $c$  and  $d$  is 25. If  $d = 30$ , then the value of  $a$  is :

(1) 25                (2) 45  
(3) 30                (4) 15

(SSC CGL Tier-I (CBE)  
Exam. 29.08.2016) (1st Sitting)

- 59.** In a class, average height of all students is ' $a$ ' cms. Among them, average height of 10 students is ' $b$ ' cms and the average height of the remaining students is ' $c$ ' cms. Find the number of students in the class. (Here  $a > c$  and  $b > c$ )

(1)  $\frac{a(b-c)}{(a-c)}$     (2)  $\frac{b-c}{(a-c)}$

(3)  $\frac{(b-c)}{10(a-c)}$     (4)  $\frac{10(b-c)}{(a-c)}$

(SSC CGL Tier-I (CBE)

Exam. 01.09.2016) (IIIrd Sitting)

- 60.** Nine students of a class contribute a certain sum of money. Seven of them gave Rs. 50 each and the other two gave respectively Rs. 50 and Rs. 90 more than the others. The average contribution of the class of 9 students is :

(1) Rs. 70            (2) Rs. 50  
(3) Rs. 100          (4) Rs. 120

(SSC CGL Tier-I (CBE)

Exam. 03.09.2016) (IIInd Sitting)

- 61.** The average temperature for Monday, Tuesday, Wednesday and Thursday was  $48^\circ$ . The average temperature for Tuesday, Wednesday, Thursday and Friday was  $52^\circ$ . If the temperature on Monday was  $42^\circ$ , then the temperature on Friday was (in degrees)

(1) 58                (2) 56  
(3) 52                (4) 50

(SSC CGL Tier-I (CBE)

Exam. 04.09.2016) (IIIrd Sitting)

- 62.** If the arithmetic mean of 7, 5, 13,  $x$  and 9 is 10, then the value of  $x$  is :

(1) 10                (2) 12  
(3) 14                (4) 16

(SSC CGL Tier-I (CBE)

Exam. 08.09.2016) (IIIrd Sitting)

- 63.** The average revenues of 7 consecutive years of a company is Rs. 75 lakhs. If the average of first 4 years is Rs. 70 lakhs and that of last 4 years is Rs. 82 lakhs, what will be the revenue for the 4th year ?

(1) Rs. 85 lakhs    (2) Rs. 83 lakhs  
(3) Rs. 81 lakhs    (4) Rs. 79 lakhs

(SSC CHSL (10+2) Tier-I (CBE)

Exam. 15.01.2017) (IIInd Sitting)

- 30.** In an examination the average marks obtained by John in English, Maths, Hindi and Drawing were 50. His average marks in Maths, Science, Social Studies and Craft were 70. If the average marks in all seven subjects is 58, his score in maths was

(1) 50                (2) 52  
(3) 60                (4) 74

(SSC CGL Tier-II (CBE)

Exam. 12.01.2017)

- 41.** The average of prime numbers between 1 and 20 is

(1) 9                  (2)  $9\frac{5}{8}$

(3)  $10\frac{1}{8}$                 (4) 8

(SSC Multi-Tasking Staff  
Exam. 30.04.2017)

**TYPE-II**

- 1.** The average of 9 numbers is 30. The average of first 5 numbers is 25 and that of the last 3 numbers is 35. What is the 6th number?

(1) 20                (2) 30  
(3) 40                (4) 50

(SSC CGL Prelim Exam. 27.02.2000)  
(Second Sitting)

- 2.** The average of 15 numbers is 7. If the average of the first 8 numbers be 6.5 and the average of last 8 numbers be 9.5, then the middle number is

(1) 20                (2) 21  
(3) 23                (4) 18

(SSC CGL Prelim Exam. 11.05.2003)  
(Second Sitting)

- 3.** The average of 8 numbers is 20. The average of first two numbers

is  $15\frac{1}{2}$  and that of the next

three is  $21\frac{1}{3}$ . If the sixth num-

ber be less than the seventh and eighth numbers by 4 and 7 respectively, then the eighth number is :

(1) 18                (2) 22  
(3) 25                (4) 27

(SSC CGL Prelim Exam. 08.02.2004)  
(First Sitting)

- 4.** The average of 20 numbers is 12. The average of the first 12 numbers is 11 and that of the next 7 numbers is 10. The last number is :

(1) 40                (2) 38  
(3) 48                (4) 50

(SSC CGL Prelim Exam. 08.02.2004)  
(Second Sitting)

- 5.** Out of seven given numbers, the average of the first four numbers is 4 and that of the last four numbers is also 4. If the average of all the seven numbers is 3, fourth number is

(1) 3                  (2) 4  
(3) 7                  (4) 11

(SSC CGL Prelim Exam. 04.02.2007)  
(First Sitting)



**AVERAGE**

- 6.** The average temperature of the first 4 days of a week was 37°C and that of the last 4 days of the week was 41°C. If the average temperature of the whole week was 39°C, the temperature of the fourth day was

(1) 38°C      (2) 38.5°C  
(3) 39°C      (4) 40°C

(SSC CHSL DEO & LDC

Exam. 28.11.2010 (IInd Sitting)

- 7.** In a certain year, the average monthly income of a person was ₹ 3,400. For the first eight months of the year, his average monthly income was ₹ 3,160 and for the last five months, it was ₹ 4,120. His income in the eighth month of the year was

(1) ₹ 3,160      (2) ₹ 5,080  
(3) ₹ 15,520      (4) ₹ 5,520

(SSC CGL Prelim Exam. 27.07.2008  
(Second Sitting))

- 8.** The average of 30 numbers is 12. The average of the first 20 of them is 11 and that of the next 9 is 10. The last number is

(1) 60      (2) 45  
(3) 40      (4) 50

(SSC CGL Prelim Exam. 27.07.2008  
(First Sitting))

- 9.** The average of 11 results is 50. If the average of the first six results is 49 and that of the last six is 52, the sixth no. is

(1) 48      (2) 50  
(3) 52      (4) 56

(SSC Graduate Level Tier-II  
Exam. 29.09.2013)

- 10.** The average of eight successive numbers is 6.5. The average of the smallest and the greatest numbers among them will be :

(1) 4      (2) 6.5  
(3) 7.5      (4) 9

(SSC CHSL DEO & LDC  
Exam. 28.11.2010 (1st Sitting))

- 11.** The average of three numbers is 135. The largest number is 195 and the difference between the other two is 20. The smallest number is

(1) 65      (2) 95  
(3) 105      (4) 115

(SSC Multi-Tasking (Non-Technical)  
Staff Exam. 20.02.2011, 22.02.2011)

- 12.** Out of four numbers, the average of the first three is 18 and that of the last three is 16. If the last number is 19, the first is

(1) 19      (2) 18  
(3) 20      (4) 25

(SSC Constable (GD) & Rifleman  
(GD) Exam. 22.04.2012 (IInd Sitting))

- 13.** The mean of 11 numbers is 35. If the mean of first 6 numbers is 32 and that of the last 6 numbers is 37, find the sixth number.

(1) 28      (2) 29  
(3) 30      (4) 27

(SSC CHSL DEO & LDC  
Exam. 28.10.2012)

- 14.** Out of four numbers, the average of the first three is 15 and that of the last three is 16. If the last number is 19, the first is

(1) 19      (2) 15  
(3) 16      (4) 18

(SSC Graduate Level Tier-I  
Exam. 19.05.2013 1st Sitting)

- 15.** The average of nine numbers is 50. The average of the first five numbers is 54 and that of the last three numbers is 52. Then the sixth number is

(1) 30      (2) 34  
(3) 24      (4) 44

(SSC Graduate Level Tier-I  
Exam. 19.05.2013 1st Sitting)

- 16.** The average of 11 numbers is 63. If the average of first six numbers is 60 and the last six numbers is 65, then the 6th number is

(1) 57      (2) 60  
(3) 62      (4) 64

(SSC CGL Tier-I  
Re-Exam. (2013) 27.04.2014)

- 17.** Three numbers are such that the average of first two numbers is 2, the average of the last two numbers is 3 and the average of the first and the last numbers is 4, then the average of three numbers is equal to

(1) 2      (2) 3.5  
(3) 3      (4) 2.5

(SSC CHSL (10+2) DEO & LDC  
Exam. 16.11.2014, IInd Sitting  
TF No. 545 GP 6)

- 18.** The average of the largest and smallest 3 digit numbers formed by 0, 2 and 4 would be

(1) 312      (2) 213  
(3) 222      (4) 303

(SSC CGL Tier-II Exam. 12.04.2015  
TF No. 567 TL 9)

- 19.** The average of six numbers is 3.95. The average of two of them is 3.4, while the average of the other two is 3.85. The average of the remaining two numbers is

(1) 4.6      (2) 4.5  
(3) 4.8      (4) 4.7

(SSC CGL Tier-II Exam. 12.04.2015  
TF No. 567 TL 9)

- 20.** Out of four numbers the average of the first three is 16 and that of the last three is 15. If the last number is 20 then the first number is

(1) 23      (2) 25  
(3) 28      (4) 21

(SSC CGL Tier-I Exam, 09.08.2015  
(IInd Sitting) TF No. 4239378)

- 21.** Average of  $n$  numbers is  $a$ . The first number is increased by 2, second one is increased by 4, the third one is increased by 8 and so on. The average of the new numbers is

(1)  $a + \frac{2^{n-1} - 1}{n}$       (2)  $a + 2 \frac{2^n - 1}{n}$

(3)  $a + \frac{2^{n-1}}{n}$       (4)  $a + \frac{2^n - 1}{n}$

(SSC CGL Tier-II Exam,  
25.10.2015, TF No. 1099685)

- 22.** The average of 12 numbers is 15 and the average of the first two is 14. What is the average of the rest?

(1) 15      (2)  $15 \frac{1}{5}$

(3) 14      (4)  $14 \frac{1}{5}$

(SSC CHSL (10+2) LDC, DEO  
& PA/SA Exam, 15.11.2015  
(IInd Sitting) TF No. 7203752)

- 23.** The average of 8 numbers is 21. If each of the numbers is multiplied by 8, the average of the new set of numbers is :

(1) 21      (2) 29  
(3) 8      (4) 168

(SSC CHSL (10+2) LDC, DEO  
& PA/SA Exam, 06.12.2015  
(1st Sitting) TF No. 1375232)

- 24.** The average of 13 results is 70. The average of first seven is 65 and that of the last seven is 75, the seventh result is :

(1) 67      (2) 70  
(3) 68      (4) 70.5

(SSC CHSL (10+2) LDC, DEO  
& PA/SA Exam, 06.12.2015  
(IInd Sitting) TF No. 3441135)





**AVERAGE**

- 25.** The average of two numbers is 8 and the average of other three numbers is 3. The average of the five numbers is :

(1) 2                      (2) 3  
(3) 5                      (4) 6

(SSC CGL Tier-I (CBE)

Exam. 31.08.2016 (IIIrd Sitting)

- 26.** The average of 15 numbers is 7. If the average of the first 8 numbers is 6.5 and the average of the last 8 numbers is 8.5, then the middle number is :

(1) 10                      (2) 23  
(3) 13                      (4) 15

(SSC CGL Tier-I (CBE)

Exam. 08.09.2016 (IInd Sitting)

**TYPE-III**

- 1.** The average of 7 consecutive numbers is 20. The largest of these numbers is :

(1) 24                      (2) 23  
(3) 22                      (4) 20

(SSC CGL Prelim Exam. 27.02.2000

(Ist Sitting) and SSC Constable

(GD) & Rifleman (GD)

Exam. 24.04.2012 (Ist Sitting)

- 2.** The average of first nine prime numbers is

(1) 9                      (2) 11

(3)  $11\frac{2}{9}$                       (4)  $11\frac{1}{9}$

(SSC CPO S.I. Exam. 12.01.2003)

- 3.** The average of 5 consecutive natural numbers is  $m$ . If the next three natural numbers are also included, how much more than  $m$  will the average of these 8 numbers be?

(1) 2                      (2) 1  
(3) 1.4                      (4) 1.5

(SSC CPO S.I. Exam. 03.09.2006)

- 4.** The average of the first 100 positive integers is

(1) 100                      (2) 51  
(3) 50.5                      (4) 49.5

(SSC CGL Tier-I Exam. 16.05.2010

(First Sitting)

- 5.** The average of odd numbers upto 100 is

(1) 50.5                      (2) 50  
(3) 49.5                      (4) 49

(SSC Data Entry Operator Exam.

02.08.2009 & SSC CGL Tier-I

Exam. 16.05.2010 (IInd Sitting)

- 6.** The average of the squares of first ten natural numbers is

(1) 35.5                      (2) 36  
(3) 37.5                      (4) 38.5

(SSC SAS Exam 26.06.2010

(Paper-1)

- 7.** The arithmetic mean (average) of the first 10 whole numbers is

(1) 5                      (2) 4  
(3) 5.5                      (4) 4.5

(SSC CISF ASI Exam 29.08.2010

(Paper-1)

- 8.** The average of three consecutive odd numbers is 12 more than one third of the first of these numbers. What is the last of the three numbers ?

(1) 15  
(2) 17  
(3) 19  
(4) Data inadequate

(SSC CGL Tier-1 Exam 19.06.2011

(Second Sitting)

- 9.** The average of nine consecutive odd numbers is 53. The least odd number is

(1) 22                      (2) 27  
(3) 35                      (4) 45

(SSC Data Entry Operator

Exam. 31.08.2008)

- 10.** The average of the first nine integral multiples of 3 is

(1) 21                      (2) 12  
(3) 15                      (4) 18

(SSC Graduate Level Tier-I

Exam. 19.05.2013 Ist Sitting)

- 11.** The average of seven consecutive positive integers is 26. The smallest of these integers is :

(1) 21                      (2) 23  
(3) 25                      (4) 26

(SSC CHSL DEO & LDC

Exam. 27.11.2010)

- 12.**  $a, b, c, d, e, f, g$  are consecutive even numbers.  $j, k, l, m, n$  are consecutive odd numbers. The average of all the numbers is

(1)  $3\left(\frac{a+n}{2}\right)$

(2)  $\left(\frac{l+d}{2}\right)$

(3)  $\frac{a+b+m+n}{4}$

(4)  $\frac{j+c+n+g}{4}$

(SSC CHSL DEO & LDC

Exam. 04.12.2011

(IInd Sitting (North Zone)

- 13.** If the average of 6 consecutive even numbers is 25, the difference between the largest and the smallest number is

(1) 8                      (2) 10  
(3) 12                      (4) 14

(SSC Graduate Level Tier-II

Exam. 29.09.2013)

- 14.** The average of 5 consecutive integers starting with ' $m$ ' is  $n$ . What is the average of 6 consecutive integers starting with  $(m+2)$  ?

(1)  $\frac{2n+5}{2}$                       (2)  $(n+2)$

(3)  $(n+3)$                       (4)  $\frac{2n+9}{2}$

(SSC Graduate Level Tier-II

Exam. 16.09.2012)

- 15.** Eight consecutive numbers are given. If the average of the two numbers that appear in the middle is 6, then the sum of the eight given numbers is

(1) 54                      (2) 64  
(3) 36                      (4) 48

(SSC CHSL DEO & LDC Exam.

21.10.2012 (Ist Sitting)

- 16.** The average of four consecutive even numbers is 15. The 2nd highest number is

(1) 12                      (2) 18  
(3) 14                      (4) 16

(SSC CHSL DEO & LDC Exam.

28.10.2012 (Ist Sitting)

- 17.** Average of first five odd multiples of 3 is

(1) 12                      (2) 16  
(3) 15                      (4) 21

(SSC CHSL DEO & LDC Exam.

04.11.2012 (IInd Sitting)

- 18.** The average of nine consecutive numbers is  $n$ . If the next two numbers are also included the new average will

(1) increase by 2  
(2) remain the same  
(3) increase by 1.5  
(4) increase by 1

(SSC CHSL DEO & LDC Exam.

27.10.2013 IInd Sitting)

- 19.** The average of four consecutive even numbers is 9. Find the largest number.

(1) 12                      (2) 6  
(3) 8                      (4) 10

(SSC CHSL DEO & LDC Exam.

04.11.2012, Ist Sitting)





**AVERAGE**

- 20.** If  $a, b, c, d, e$  are five consecutive odd numbers, their average is

(1)  $5(a + 4)$

(2)  $\frac{abcde}{5}$

(3)  $5(a + b + c + d + e)$

(4)  $a + 4$

(SSC Graduate Level Tier-I Exam. 19.05.2013 & SSC CGL Tier-I Re-Exam. (2013) 27.04.2014)

- 21.** Average of first five prime numbers is

(1) 5.3 (2) 5.6

(3) 5 (4) 3.6

(SSC Multi-Tasking Staff Exam. 17.03.2013, IInd Sitting)

- 22.** What is the average of the first six (positive) odd numbers each of which is divisible by 7?

(1) 42 (2) 43

(3) 47 (4) 49

(SSC Multi-Tasking Staff Exam. 24.03.2013, Ist Sitting)

- 23.** The average of first ten prime numbers is

(1) 10.1 (2) 10

(3) 12.9 (4) 13

(SSC Constable (GD) Exam. 12.05.2013)

- 24.** If the average of eight consecutive even numbers be 93, then the greatest number among them is

(1) 100 (2) 86

(3) 102 (4) 98

(SSC CGL Tier-II Exam. 12.04.2015 TF No. 567 TL 9)

- 25.** The average of 6 consecutive natural numbers is  $K$ . If the next two natural numbers are also included, how much more than  $K$  will the average of these 8 numbers be?

(1) 1.3 (2) 1

(3) 2 (4) 1.8

(SSC CGL Tier-I Re-Exam, 30.08.2015)

- 26.** The average of five consecutive positive integers is  $n$ . If the next two integers are also included, the average of all these integers will

(1) increase by 1.5

(2) increase by 1

(3) remain the same

(4) increase by 2

(SSC CGL Tier-II Exam, 25.10.2015, TF No. 1099685)

- 27.** The average of all the odd integers between 2 and 22 is:

(1) 14 (2) 12

(3) 13 (4) 11

(SSC CHSL (10+2) LDC, DEO & PA/SA Exam, 06.12.2015 (Ist Sitting) TF No. 1375232)

- 28.** The sum of three consecutive even numbers is 28 more than the average of these three numbers. Then the smallest of these three numbers is

(1) 6 (2) 12

(3) 14 (4) 16

(SSC CGL Tier-II Online Exam.01.12.2016)

- 29.** The average of 7 consecutive numbers is 20. The largest of these numbers is

(1) 20 (2) 23

(3) 24 (4) 26

(SSC CGL Tier-II Online Exam.01.12.2016)

- 30.** The average of 25 consecutive odd integers is 55. The highest of these integers is

(1) 79 (2) 105

(3) 155 (4) 109

(SSC CHSL (10+2) Tier-I (CBE) Exam. 16.01.2017 (IInd Sitting))

**TYPE-IV**

- 1.** The average monthly income of A and B is ₹ 14000, that of B and C is ₹ 15600 and A and C is ₹ 14400. The monthly income of C is

(1) ₹ 16000 (2) ₹ 15000

(3) ₹ 14000 (4) ₹ 15500

(SSC CGL Prelim Exam. 24.02.2002 (Middle Zone))

- 2.** The average monthly income of X and Y is ₹ 5050. The average monthly income of Y and Z is ₹ 6250 and the average monthly income of X and Z is ₹ 5200. The monthly income of X is :

(1) ₹ 4050 (2) ₹ 3500

(3) ₹ 4000 (4) ₹ 5000

(SSC CGL Prelim Exam. 08.02.2004 (Second Sitting) and SSC SAS Exam 26.06.2010 (Paper-1))

- 3.** The average expenditure of a man for the first five months is ₹ 1200 and for the next seven months is ₹ 1300. If he saves ₹ 2900 in that year, his monthly average income is :

(1) ₹ 1500 (2) ₹ 1600

(3) ₹ 1700 (4) ₹ 1400

(SSC CHSL (10+2) LDC, DEO & PA/SA Exam, 15.11.2015 (IInd Sitting) TF No. 7203752)

- 4.** The average per day income of A, B and C is ₹ 450. If the average per day income of A and B be ₹ 400 and that of B and C be ₹ 430, the per day income of B is

(1) ₹ 300 (2) ₹ 310

(3) ₹ 415 (4) ₹ 425

(SSC Data Entry Operator Exam. 31.08.2008)

- 5.** The average salary, per head, of all the workers of an institution is ₹ 60. The average salary of 12 officers is ₹ 400; the average salary, per head, of the rest is ₹ 56. The total number of workers in the institution is

(1) 1030 (2) 1035

(3) 1020 (4) 1032

(SSC CGL Tier-I Exam. 26.10.2014)

- 6.** The average monthly expenditure of a family for the first four months is ₹ 2570, for the next three months ₹ 2490 and for the last five months ₹ 3030. If the family saves ₹ 5320 during the whole year, the average monthly income of the family during the year is

(1) ₹ 3000 (2) ₹ 3185

(3) ₹ 3200 (4) ₹ 3580

(SSC CGL Tier-II Exam. 21.09.2014)

- 7.** A man spends ₹ 1800 monthly on an average for the first four months and ₹ 2000 monthly for the next eight months and saves ₹ 5600 a year. His average monthly income is

(1) ₹ 2000 (2) ₹ 2200

(3) ₹ 2400 (4) ₹ 2600

(SSC CGL Tier-II Exam. 21.09.2014)

- 8.** The average monthly income of P and Q is ₹ 5, 050. The average monthly income of Q and R is ₹ 6, 250 and the average monthly income of P and R is ₹ 5,200. The monthly income of P is

(1) ₹ 3, 500 (2) ₹ 4, 000

(3) ₹ 4, 050 (4) ₹ 5, 000

(SSC CHSL DEO & LDC Exam. 02.11.2014 (IInd Sitting))

- 9.** The average salary of all the workers in a workshop is ₹ 8,000. The average salary of 7 technicians is ₹ 12,000 and the average salary of the rest is ₹ 6,000. The total number of workers in the workshop is

(1) 20 (2) 21

(3) 22 (4) 23

(SSC CHSL DEO & LDC Exam. 9.11.2014)



**AVERAGE**

- 10.** Average income of 'A' and 'B' is ₹ 200 and average income of 'C' and 'D' is ₹ 250. The average income of A, B, C and D is

(1) ₹ 106.25      (2) ₹ 125  
 (3) ₹ 200          (4) ₹ 225

(SSC Constable (GD)

Exam, 04.10.2015, 1st Sitting)

- 11.** The average daily income of 7 men, 11 women and 2 boys is Rs. 257.50. If the average daily income of the men is Rs.10 more than that of women and the average daily income of the women is Rs.10 more than that of boys, the average daily income of a man is

(1) Rs. 277.5      (2) Rs. 250  
 (3) Rs. 265          (4) Rs. 257

(SSC CGL Tier-II Online Exam.01.12.2016)

- 12.** The average salary of all the associates in a team is Rs. 16000. The average salary of 7 senior associates is Rs. 24000 and the average salary of the rest is Rs. 12000. How many associates work in that team?

(1) 21                  (2) 22  
 (3) 23                  (4) 24

(SSC CPO SI, ASI Online Exam.05.06.2016) (IInd Sitting)

- 13.** The average monthly salary of 19 members of a group is Rs. 16000. If one more member whose monthly salary is Rs. 20000 joins the group, then the average salary of the group is

(1) Rs. 18250      (2) Rs. 16200  
 (3) Rs. 18000      (4) Rs. 16250

(SSC CGL Tier-I (CBE)

Exam. 29.08.2016) (IInd Sitting)

- 14.** The average salary of all workers in a workshop is Rs.12000. The average salary of 7 technicians is Rs.15000 and the average salary of the rest is Rs. 9000. The total number of workers in the workshop is :

(1) 12                  (2) 13  
 (3) 14                  (4) 15

(SSC CGL Tier-I (CBE)

Exam. 04.09.2016 (IInd Sitting)

- 15.** A man spends in 8 months as much as he earns in 6 months. He saves Rs. 6000 in a year. His average monthly income is :

(1) Rs. 2400      (2) Rs. 2000  
 (3) Rs. 2150      (4) Rs. 1800

(SSC CGL Tier-I (CBE)

Exam. 07.09.2016 (IInd Sitting)

**TYPE-V**

- 1.** Of the three numbers whose average is 60, the first is one fourth of the sum of the others. The first number is :

(1) 30                  (2) 36  
 (3) 42                  (4) 45

(SSC CGL Prelim Exam. 04.07.1999 (Second Sitting)

- 2.** Of the three numbers, second is twice the first and also thrice the third. If the average of the three numbers is 44, the largest number is :

(1) 24                  (2) 72  
 (3) 36                  (4) 108

(SSC CGL Prelim Exam. 24.02.2002 (IInd Sitting) & (SSC CGL Prelim Exam. 27.07.2008 (IInd Sitting)

- 3.** The average of first three numbers is thrice the fourth number. If the average of all the four numbers is 5, then find the fourth number.

(1) 4.5                  (2) 5  
 (3) 2                    (4) 4

(SSC CGL Prelim Exam. 24.02.2002 (Middle Zone) and SSC CGL Prelim Exam. 13.11.2005 (1st Sitting)

- 4.** Of the three numbers, first is twice the second and second is twice the third. The average of three numbers is 21. The smallest of the three numbers is

(1) 9                    (2) 6  
 (3) 12                  (4) 18

(SSC CPO S.I. Exam. 12.01.2003)

- 5.** Of the three numbers, the first is 3 times the second and the third is 5 times the first. If the average of the three numbers is 57, the difference between the largest and the smallest number is

(1) 9                    (2) 18  
 (3) 126                (4) 135

(SSC CPO S.I. Exam. 12.01.2003)

- 6.** Of the three numbers, the first is twice the second and the second is 3 times the third. If their average is 100, the largest of the three numbers is :

(1) 120                  (2) 150  
 (3) 180                  (4) 300

(SSC CGL Prelim Exam. 08.02.2004 (First Sitting)

- 7.** Of the three numbers, the first is twice the second and the second is thrice the third. If the average of the three numbers is 10, the largest number is :

(1) 12                  (2) 15  
 (3) 18                  (4) 30

(SSC CPO S.I. Exam. 12.01.2003)

- 8.** The average of first three numbers is double of the fourth number. If the average of all the four numbers is 12, find the 4th number.

(1) 16                  (2)  $\frac{48}{7}$   
 (3) 20                  (4)  $\frac{18}{7}$

(SSC Graduate Level Tier-II Exam. 29.09.2013)

- 9.** The average of three numbers is 77. The first number is twice the second and the second number is twice the third. The first number is :

(1) 33                  (2) 66  
 (3) 77                  (4) 132

(SSC CGL Prelim Exam. 13.11.2005 (First Sitting)

- 10.** Out of three numbers, the first is twice the second and is half of the third. If the average of the three numbers is 56, then difference of first and third number is

(1) 12                  (2) 20  
 (3) 24                  (4) 48

(SSC CGL Prelim Exam. 13.11.2005 (Second Sitting)

- 11.** The average of three numbers is 28, the first number is half of the second, the third number is twice the second, then the third number is

(1) 48                  (2) 36  
 (3) 24                  (4) 18

(SSC Section Officer (Commercial Audit) Exam. 26.11.2006 (Second Sitting)

- 12.** The average of three numbers is 40. The first number is twice the second and the second one is thrice the third number. The difference between the largest and the smallest numbers is

(1) 30                  (2) 36  
 (3) 46                  (4) 60

(SSC CHSL DEO & LDC Exam. 04.12.2011 (IInd Sitting (North Zone)



**AVERAGE**

- 13.** Among three numbers, the first is twice the second and thrice the third. If the average of the three numbers is 49.5, then the difference between the first and the third number is

(1) 54                      (2) 28  
 (3) 39.5                  (4) 41.5

(SSC CGL Tier-1 Exam 26.06.2011  
 (First Sitting))

- 14.** Out of 4 numbers, whose average is 60, the first one is one-fourth of the sum of the last three. The first number is

(1) 15                      (2) 45  
 (3) 48                      (4) 60

(SSC CGL Tier-1 Exam 26.06.2011  
 (Second Sitting))

- 15.** Of the three numbers, the first number is twice of the second and the second is thrice of the third number. If the average of these 3 numbers is 20, then the sum of the largest and smallest numbers is

(1) 24                      (2) 42  
 (3) 54                      (4) 60

(SSC CPO (SI, ASI & Intelligence Officer)  
 Exam 28.08.2011 (Paper-I))

- 16.** If the arithmetic mean of  $3a$  and  $4b$  is greater than 50, and  $a$  is twice  $b$ , then the smallest possible integer value of  $a$  is

(1) 20                      (2) 18  
 (3) 21                      (4) 19

(SSC CGL Tier-II Exam. 12.04.2015  
 TF No. 567 TL 9)

- 17.** Of three numbers, the first is 4 times the second and 3 times the third. If the average of all the three numbers is 95, what is the third number ?

(1) 76                      (2) 60  
 (3) 130                      (4) 57

(SSC CGL Tier-II Exam,  
 2014 12.04.2015 (Kolkata Region)  
 TF No. 789 TH 7)

- 18.** Among three numbers, second is twice the first and also thrice the third. If the average of the three numbers is 33, then the largest number is :

(1) 36                      (2) 54  
 (3) 62                      (4) 72

(SSC CGL Tier-I (CBE)  
 Exam. 06.09.2016 (IInd Sitting))

**TYPE-VI**

- 1.** The average of marks of 14 student was calculated as 71. But it was later found that the marks of one student had been wrongly entered as 42 instead of 56 and of another as 74 instead of 32. The correct average is :

(1) 67                      (2) 68  
 (3) 69                      (4) 71

(SSC CGL Prelim Exam. 27.02.2000  
 (Second Sitting))

- 2.** The average weight of three men A, B and C is 84 kg. D joins them and the average weight of the four becomes 80 kg. If E whose weight is 3 kg more than that of D, replaces A, the average weight of B, C, D and E becomes 79 kg. The weight of A is

(1) 65 kg.                  (2) 70 kg.  
 (3) 75 kg.                  (4) 80 kg.

(SSC CGL Prelim Exam. 11.05.2003  
 (Second Sitting))

- 3.** The average of a collection of 20 measurements was calculated to be 56 cm. But later it was found that a mistake had occurred in one of the measurements which was recorded as 64 cm., but should have been 61 cm. The correct average must be

(1) 53 cm                  (2) 54.5 cm  
 (3) 55.85 cm              (4) 56.15 cm

(SSC CPO S.I. Exam. 07.09.2003)

- 4.** The average of marks in Mathematics for 5 students was found to be 50. Later, it was discovered that in the case of one student the marks 48 were misread as 84. The correct average is :

(1) 40.2                      (2) 40.8  
 (3) 42.8                      (4) 48.2

(SSC CPO S.I. Exam. 26.05.2005)

- 5.** The average weight of 15 students in a class increases by 1.5kg when one of the students weighing 40 kg is replaced by a new student. What is the weight (in kg) of the new student ?

(1) 64.5 kg.                  (2) 56 kg.  
 (3) 60 kg.                      (4) 62.5 kg.

(SSC CPO S.I. Exam. 06.09.2009)

- 6.** The average marks of 100 students were found to be 40. Later on it was discovered that a score of 53 was misread as 83. Find the correct average corresponding to the correct score.

(1) 38.7                      (2) 39  
 (3) 39.7                      (4) 41

(SSC CPO S.I. Exam. 06.09.2009)

- 7.** The average weight of a group of 20 boys was calculated to be 89.4 kg and it was later discovered that one weight was misread as 78 kg, instead of 87kg. The correct average weight is

(1) 88.95 kg                  (2) 89.25 kg  
 (3) 89.55 kg                  (4) 89.85 kg

(SSC CGL Tier-1 Exam 19.06.2011  
 (First Sitting))

- 8.** The average of 18 observations is recorded as 124. Later it was found that two observations with values 64 and 28 were entered wrongly as 46 and 82. Find the correct average of the 18 observations.

(1)  $111\frac{7}{9}$                       (2) 122

(3) 123                      (4)  $137\frac{3}{9}$

(SSC CGL Tier-1 Exam 19.06.2011  
 (Second Sitting))

- 9.** The mean of 50 numbers is 30. Later it was discovered that two entries were wrongly entered as 82 and 13 instead of 28 and 31. Find the correct mean.

(1) 36.12                      (2) 30.66  
 (3) 29.28                      (4) 38.21

(SSC CGL Tier-1 Exam 26.06.2011  
 (First Sitting))

- 10.** The average of 25 observations is 13. It was later found that an observation 73 was wrongly entered as 48. The new average is

(1) 12.6                      (2) 14  
 (3) 15                          (4) 13.8

(SSC CGL Tier-1 Exam 26.06.2011  
 (Second Sitting))

- 11.** Mean of 10 numbers is 30. Later on it was observed that numbers 15, 23 are wrongly taken as 51, 32. The correct mean is

(1) 25.5                      (2) 32  
 (3) 30                          (4) 34.5

(SSC CPO (SI, ASI & Intelligence Officer)  
 Exam 28.08.2011 (Paper-I))

- 12.** The mean of 50 observations was 36. It was found later that an observation 48 was wrongly taken as 23. The corrected (new) mean is

(1) 35.2                      (2) 36.1  
 (3) 36.5                      (4) 39.1

(SSC CGL Prelim Exam. 11.05.2003  
 (Second Sitting))





**AVERAGE**

- 13.** While finding the average of 10 given numbers, a student, by mistake, wrote 64 in place of a number 46 and got his correct average 50. The correct average of the given numbers is :

(1) 48.2            (2) 48.3  
 (3) 49.1            (4) 49.3

(SSC CHSL DEO & LDC  
Exam. 27.11.2010)

- 14.** The average of 10 numbers is calculated as 15. It is discovered later on that while calculating the average one number, namely 36, was wrongly read as 26. The correct average is

(1) 20                (2) 18  
 (3) 16                (4) 14

(SSC CHSL DEO & LDC  
Exam. 28.11.2010 (1st Sitting))

- 15.** A student finds the average of ten 2-digit numbers. While copying numbers, by mistake, he writes one number with its digits interchanged. As a result his answer is 1.8 less than the correct answer. The difference of the digits of the number, in which he made mistake, is

(1) 2                (2) 3  
 (3) 4                (4) 6

(SSC CHSL DEO & LDC  
Exam. 28.11.2010 (IInd Sitting))

- 16.** The average of 27 numbers is 60. If one number is changed from 28 to 82, the average is

(1) 56                (2) 58  
 (3) 62                (4) 64

(SSC CISF Constable (GD)  
Exam. 05.06.2011)

- 17.** A tabulator while calculating the average marks of 100 students of an examination, by mistake enters 68, instead of 86 and obtained the average as 58; the actual average marks of those students is

(1) 58.18            (2) 57.82  
 (3) 58.81            (4) 57.28

(SSC CHSL DEO & LDC  
Exam. 04.12.2011 (1st Sitting  
(East Zone))

- 18.** The mean of 20 items is 47. Later it is found that the item 62 is wrongly written as 26. Find the correct mean.

(1) 48.8            (2) 47.7  
 (3) 49.9            (4) 46.6

(SSC CHSL DEO & LDC  
Exam. 04.12.2011 (IInd Sitting  
(East Zone))

- 19.** The mean value of 20 observations was found to be 75, but later on it was detected that 97 was misread as 79. Find the correct mean.

(1) 75.7            (2) 75.8  
 (3) 75.9            (4) 75.6

(SSC CHSL DEO & LDC  
Exam. 11.12.2011 (IInd Sitting  
(East Zone))

- 20.** The mean of 100 items was 46. Later on it was discovered that an item 16 was misread as 61 and another item 43 was misread as 34. It was also found that the number of items were 90 and not 100. Then what is the correct mean ?

(1) 50                (2) 50.7  
 (3) 52                (4) 52.7

(SSC Graduate Level Tier-II  
Exam. 16.09.2012)

- 21.** The average of seven numbers is 18. If one of the number is 17 and if it is replaced by 31, then the average becomes :

(1) 21.5            (2) 19.5  
 (3) 20                (4) 21

(SSC CHSL DEO & LDC  
Exam. 21.10.2012 (IInd Sitting))

- 22.** In an exam, the average marks obtained by the students was found to be 60. After omission of computational errors, the average marks of 100 candidates had to be changed from 60 to 30 and the average with respect to all the examinees came down to 45 marks. The total number of candidates who took the exam, was

(1) 200            (2) 210  
 (3) 240            (4) 180

(SSC Assistant Grade-III  
Exam. 11.11.2012 (IInd Sitting))

- 23.** In an examination, the average of marks was found to be 50. For deducting marks for computational errors, the marks of 100 candidates had to be changed from 90 to 60 each and so the average of marks came down to 45. The total number of candidates, who appeared at the examination, was

(1) 600            (2) 300  
 (3) 200            (4) 150

(SSC CPO S.I. Exam. 12.12.2010  
(Paper-I))

- 24.** The average of 10 items was found to be 80 but while calculating, one of the items was counted as 60 instead of 50. Then the correct average would have been :

(1) 69                (2) 79.25  
 (3) 79                (4) 79.5

(SSC Multi-Tasking Staff  
Exam. 10.03.2013)

- 25.** The average of 9 integers is found to be 11. But after the calculation, it was detected that, by mistake, the integer 23 was copied as 32, while calculating the average. After the due correction is made, the new average will be

(1) 10                (2) 9  
 (3) 10.1            (4) 9.5

(SSC Constable (GD)  
Exam. 12.05.2013)

- 26.** The average weight of 20 students in a class is increased by 0.75 kg when one of the students weighing 30 kg is replaced by a new student. Weight of the new student (in kg) is :

(1) 35                (2) 40  
 (3) 45                (4) 50

(SSC CGL Prelim Exam. 27.02.2000  
(Second Sitting))

- 27.** Average weight of 25 persons is increased by 1 kg when one man weighing 60 kg is replaced by a new person. Weight of new person is :

(1) 50 kg            (2) 61 kg  
 (3) 86 kg            (4) 85 kg

(SSC CGL Prelim Exam. 08.02.2004  
(Second Sitting))

- 28.** There are 50 students in a class. One of them weighing 50 kg goes away and a new student joins. By this the average weight of the

class increases by  $\frac{1}{2}$  kg. The

weight of the new student is :

(1) 70 kg            (2) 72 kg  
 (3) 75 kg            (4) 76 kg

(SSC CGL Prelim Exam. 08.02.2004  
(Second Sitting))



**AVERAGE**

- 29.** The average weight of the 8 oarsmen in boat is increased by  $1\frac{1}{2}$  kg when one of the crew who weighs 60kg is replaced by a new man. The weight of the new man (in kg) is  
 (1) 70 kg (2) 68 kg  
 (3) 71 kg (4) 72 kg  
 (SSC CHSL DEO & LDC Exam. 28.10.2012, 1st Sitting)

- 30.** The average weight of 12 crewmen in a boat is increased by  $\frac{1}{3}$  kg, when one of the crewmen whose weight is 55kg is replaced by a new man. What is the weight of that new man?  
 (1) 58 kg (2) 60 kg  
 (3) 57 kg (4) 59 kg  
 (SSC CHSL DEO & LDC Exam. 04.11.2012, 1st Sitting)

- 31.** The average marks obtained by 22 candidates in an examination are 45. The average marks of the first 10 candidates are 55 and those of the last eleven are 40. The number of marks obtained by the eleventh candidate is  
 (1) 45 (2) 0  
 (3) 50 (4) 47.5  
 (SSC CGL Tier-I Re-Exam. (2013) 20.07.2014 (1st Sitting))

- 32.** The mean of 20 items is 55. If two items 45 and 30 are removed, the new mean of the remaining items is  
 (1) 65.1 (2) 65.3  
 (3) 56.9 (4) 56  
 (SSC CGL Tier-I Re-Exam. (2013) 20.07.2014 (IInd Sitting))

- 33.** The average marks obtained by 40 students of a class is 86. If the 5 highest marks are removed, the average reduces by one mark. The average marks of the top 5 students is  
 (1) 92 (2) 96  
 (3) 93 (4) 97  
 (SSC CGL Tier-I Exam. 19.10.2014)

- 34.** The average of 50 numbers is 38. If two numbers, namely 45 and 55 are discarded, the average of the remaining numbers is  
 (1) 37.5 (2) 37.9  
 (3) 36.5 (4) 37.0  
 (SSC CGL Tier-I Exam. 26.10.2014)

- 35.** The average of six numbers is 20. If one number is removed, the average becomes 15. What is the number removed?  
 (1) 5 (2) 35  
 (3) 112 (4) 45  
 (SSC CGL Tier-II Exam. 21.09.2014)

- 36.** The average marks secured by 36 students was 52. But it was discovered that an item 64 was misread as 46. What is the correct mean of marks?  
 (1) 54 (2) 53.5  
 (3) 53 (4) 52.5  
 (SSC CHSL DEO & LDC Exam. 16.11.2014)

- 37.** A boy found that the average of 20 numbers is 35 when he writes a number '61' instead of '16'. The correct average of 20 numbers is  
 (1) 32.75 (2) 37.25  
 (3) 34.75 (4) 34.25  
 (SSC CAPFs SI, CISF ASI & Delhi Police SI Exam. 22.06.2014 TF No. 999 KP0)

- 38.** The average of 20 numbers is calculated as 35. It is discovered later, that while calculating the average, one number, namely 85, was read as 45. The correct average is  
 (1) 36.5 (2) 37  
 (3) 37.5 (4) 36  
 (SSC CGL Tier-II Exam, 2014 12.04.2015 (Kolkata Region) TF No. 789 TH 7)

- 39.** The average marks obtained by a student in 6 subjects is 88. On subsequent verification it was found that the marks obtained by him in a subject was wrongly copied as 86 instead of 68. The correct average of the marks obtained by him is  
 (1) 87 (2) 85  
 (3) 84 (4) 86  
 (SSC CGL Tier-I Exam, 16.08.2015 (1st Sitting) TF No. 3196279)

- 40.** The average of 100 items was found to be 30. If at the time of calculation, two items were wrongly taken as 32 and 12 instead of 23 and 11, then the correct average is :  
 (1) 29.8 (2) 29  
 (3) 29.9 (4) 29.5  
 (SSC CGL Tier-I (CBE) Exam. 06.09.2016 (IInd Sitting))

- 41.** A student, by mistake, wrote 64 in place of 46 as a number at the time of finding the average of 10 given numbers and got the average as 50. The correct average of the numbers is :  
 (1) 48.2 (2) 48  
 (3) 48.1 (4) 49  
 (SSC CGL Tier-I (CBE) Exam. 10.09.2016 (IInd Sitting))

- 42.** The average of 9 observations was found to be 35. Later on, it was detected that an observation 81 was misread as 18. The correct average of the observations is :  
 (1) 28 (2) 42  
 (3) 32 (4) 45  
 (SSC CGL Tier-I (CBE) Exam. 11.09.2016 (IInd Sitting))

**TYPE-VII**

- 1.** A cricketer whose bowling average is 24.85, runs per wicket, takes 5 wickets for 52 runs and thereby decreases his average by 0.85. The number of wickets taken by him till the last match was :  
 (1) 64 (2) 72  
 (3) 80 (4) 96  
 (SSC CGL Prelim Exam. 27.02.2000 (First Sitting))
- 2.** The average of runs of a cricket player of 10 innings was 32. How many runs must he make in his next inning so as to increase his average of runs by 4 ?  
 (1) 76 (2) 70  
 (3) 4 (4) 2  
 (SSC CGL Prelim Exam. 08.02.2004 (First Sitting))
- 3.** The bowling average of a cricketer was 12.4. He improves his bowling average by 0.2 points when he takes 5 wickets for 26 runs in his last match. The number of wickets taken by him before the last match was  
 (1) 125 (2) 150  
 (3) 175 (4) 200  
 (SSC CGL Prelim Exam. 27.07.2008 (First Sitting))
- 4.** A cricketer had a certain average of runs for his 64 innings. In his 65th innings, he is bowled out for no score on his part. This brings down his average by 2 runs. His new average of runs is  
 (1) 130 (2) 128  
 (3) 70 (4) 68  
 (SSC CGL Prelim Exam. 27.07.2008 (Second Sitting))



**AVERAGE**

5. A cricketer has a certain average of runs for his 8 innings. In the ninth innings, he scores 100 runs, thereby increases his average by 9 runs. His new average of runs is  
 (1) 20 (2) 24  
 (3) 28 (4) 32  
 (SSC CPO S.I. Exam. 09.11.2008)
6. The average of runs scored by a player in 10 innings is 50. How many runs should he score in the 11th innings so that his average is increased by 2 runs?  
 (1) 80 runs (2) 72 runs  
 (3) 60 runs (4) 54 runs  
 (SSC CPO S.I. Exam. 05.09.2004)
7. A cricket batsman had a certain average of runs for his 11 innings. In the 12th innings, he made a score of 90 runs and thereby his average of runs was decreased by 5. His average of runs after 12th innings is :  
 (1) 155 (2) 150  
 (3) 145 (4) 140  
 (SSC CHSL DEO & LDC Exam. 28.11.2010 (1st Sitting) & (SSC CHSL DEO & LDC Exam. 11.12.2011 (IInd Sitting))
8. The batting average for 40 innings of a cricket player is 50 runs. His highest score exceeds his lowest score by 172 runs. If these two innings are excluded, the average of the remaining 38 innings is 48 runs. The highest score of the player is  
 (1) 165 runs (2) 170 runs  
 (3) 172 runs (4) 174 runs  
 (SSC CHSL DEO & LDC Exam. 04.12.2011 (1st Sitting (North Zone))
9. The batting average of a cricket player for 64 innings is 62 runs. His highest score exceeds his lowest score by 180 runs. Excluding these two innings, the average of remaining innings becomes 60 runs. His highest score was  
 (1) 180 runs (2) 209 runs  
 (3) 212 runs (4) 214 runs  
 (SSC CHSL DEO & LDC Exam. 11.12.2011 (1st Sitting (East Zone))
10. A cricket player after playing 10 tests scored 100 runs in the 11th test. As a result, the average of his runs is increased by 5. The present average of runs is  
 (1) 45 (2) 40  
 (3) 50 (4) 55  
 (SSC Multi-Tasking Staff Exam. 17.03.2013, 1st Sitting)
11. A cricketer has a mean score of 60 runs in 10 innings. Find out how many runs are to be scored in the eleventh innings to raise the mean score to 62?  
 (1) 83 (2) 82  
 (3) 80 (4) 81  
 (SSC CHSL DEO & LDC Exam. 21.10.2012 (1st Sitting))
12. In a 20 over match, the required run rate to win is 7.2. If the run rate is 6 at the end of the 15th over, the required run rate to win the match is  
 (1) 1.2 (2) 13.2  
 (3) 10.8 (4) 12  
 (SSC CHSL DEO & LDC Exam. 28.10.2012 (1st Sitting))
13. A batsman in his 12th innings makes a score of 63 runs and there by increases his average scores by 2. What is his average after the 12th innings?  
 (1) 13 (2) 39  
 (3) 49 (4) 87  
 (SSC CHSL DEO & LDC Exam. 04.11.2012, 1st Sitting)
14. The batting average for 30 innings of a cricket player is 40 runs. His highest score exceeds his lowest score by 100 runs. If these two innings are not included, the average of the remaining 28 innings is 38 runs. The lowest score of the player is :  
 (1) 15 (2) 18  
 (3) 20 (4) 12  
 (SSC CAPFs SI & CISF ASI Exam. 23.06.2013)
15. Sachin Tendulkar has a certain average for 11 innings. In the 12th innings he scores 120 runs and thereby increases his average by 5 runs. His new average is  
 (1) 60 (2) 62  
 (3) 65 (4) 66  
 (SSC Graduate Level Tier-II Exam. 29.09.2013)
16. A cricketer whose bowling average is 12.4 runs per wicket, takes 5 wickets for 26 runs and thereby decreases his average by 0.4. The number of wickets taken by him till the last match was  
 (1) 64 (2) 72  
 (3) 80 (4) 85  
 (SSC CHSL DEO & LDC Exam. 02.11.2014 (IInd Sitting))
17. The average run of a player is 32 out of 10 innings. How many runs must he make in the next innings so as to increase his average by 6 ?  
 (1) 38 (2) 40  
 (3) 6 (4) 98  
 (SSC CAPFs SI, CISF ASI & Delhi Police SI Exam, 21.06.2015 IInd Sitting)
18. A batsman makes a score of 87 runs in the 17th innings and thus increased his average by 3. Find his average after 17th innings.  
 (1) 39 (2) 87  
 (3) 90 (4) 84  
 (SSC Constable (GD) Exam, 04.10.2015, 1st Sitting)
19. The batting average for 40 innings of a cricket player is 50 runs. His highest score exceeds his lowest score by 172 runs. If these two innings are excluded, the average of the remaining 38 innings is 48 runs. The highest score of the player is  
 (1) 165 (2) 170  
 (3) 172 (4) 174  
 (SSC CGL Tier-II Online Exam.01.12.2016)
20. The average of runs of a cricket player of 20 innings was 32. How many runs must he make in his next innings so as to increase his average of runs by 4?  
 (1) 116 (2) 114  
 (3) 170 (4) 76  
 (SSC CGL Tier-I (CBE) Exam. 27.08.2016 (IInd Sitting))
21. A batsman in his 12th innings makes a score of 120, and thereby increases his average by 5. The average score after 12th innings is  
 (1) 60 (2) 55  
 (3) 65 (4) 70  
 (SSC CGL Tier-I (CBE) Exam. 02.09.2016 (1st Sitting))
22. The averages of runs scored by a cricket player in 11 innings is 63 and the average of his first six innings is 60 and the average of last six innings is 65. Find the runs scored by him in the sixth innings.  
 (1) 60 (2) 54  
 (3) 67 (4) 57  
 (SSC CGL Tier-I (CBE) Exam. 02.09.2016 (IInd Sitting))





**AVERAGE**

- 23.** Average runs scored by 11 players of a cricket team is 23. If the first player scored 113 runs. Find the average runs of the remaining players.

(1) 8 runs      (2) 12 runs  
 (3) 14 runs      (4) 27 runs

(SSC CGL Tier-I (CBE)

Exam. 30.08.2016) (IInd Sitting)

- 24.** The average of runs scored by a cricketer in his 99 innings is 99. How many runs will he have to score in his 100th innings so that his average of runs in 100 innings may be 100?

(1) 100      (2) 99  
 (3) 199      (4) 101

(SSC CGL Tier-I (CBE)

Exam. 31.08.2016) (IInd Sitting)

- 25.** In the first 10 overs of a cricket game, the run rate was only 3.2. The run rate in the remaining 40 overs to reach the target of 282 runs is

(1) 6.4      (2) 6.3  
 (3) 6.25      (4) 6.5

(SSC CGL Tier-II (CBE)

Exam. 30.11.2016)

- 26.** A cricketer, whose bowling average was 12.4 runs/wicket takes 5 wickets for 22 runs in a match, thereby decreases his average by 0.4. The number of wickets, taken by him before this match was :

(1) 78      (2) 87  
 (3) 95      (4) 105

(SSC CGL Tier-I (CBE)

Exam. 02.09.2016) (IInd Sitting)

- 27.** A batsman has a certain average of runs for 12 innings. In the 13th innings he scores 96 runs thereby increasing his average by 5 runs. What will be his average after 13th innings?

(1) 28      (2) 32  
 (3) 36      (4) 42

(SSC CGL Tier-II (CBE)

Exam. 12.01.2017)

**TYPE-VIII**

- 1.** The average of five numbers is 27. If one number is excluded, the average becomes 25. The excluded number is :

(1) 25      (2) 27  
 (3) 30      (4) 35

(SSC CGL Prelim Exam. 04.07.1999 (1st Sitting) & (SSC SO (Commercial Audit)

Exam. 16.11.2003)

- 2.** The average of marks of 28 students in Mathematics was 50; 8 students left the school, then this average increased by 5. What is the average of marks obtained by the students who left the school ?

(1) 50.5      (2) 37.5  
 (3) 42.5      (4) 45

(SSC CGL Prelim Exam. 13.11.2005

(Second Sitting)

- 3.** The average weight of 12 parcels is 1.8 kg. Addition of another new parcel reduces the average weight by 50 g. What is the weight of the new parcel ?

(1) 1.50 kg      (2) 1.10 kg  
 (3) 1.15 kg      (4) 1.01 kg

(SSC CPO S.I. Exam. 07.09.2003)

- 4.** The average of 50 numbers is 38. If two numbers namely 45 and 55 are discarded, the average of the remaining numbers is :

(1) 35      (2) 32.5  
 (3) 37.5      (4) 36

(SSC Graduate Level Tier-I

Exam. 21.04.2013 (1st Sitting)

- 5.** There are 50 students in a class. Their average weight is 45 kg. When one student leaves the class the average weight reduces by 100g. What is the weight of the student who left the class ?

(1) 45 kg      (2) 47.9 kg  
 (3) 49.9 kg      (4) 50.1 kg

(SSC CPO S.I.

Exam 12.12.2010 (Paper-I)

- 6.** Average weight of 25 students of a class is 50 kg. If the weight of the class teacher is included, the average is increased by 1 kg. The weight of the teacher is

(1) 76 kg      (2) 77 kg  
 (3) 74 kg      (4) 75 kg

(SSC Multi-Tasking Staff

Exam. 17.03.2013, 1st Sitting)

- 7.** There were 35 students in a hostel. If the number of students is increased by 7 the expenditure on food increases by ₹ 42 per day while the average expenditure of students is reduced by ₹ 1. What was the initial expenditure on food per day ?

(1) ₹ 400      (2) ₹ 432  
 (3) ₹ 442      (4) ₹ 420

(SSC Section Officer (Commercial Audit) Exam. 25.09.2005)

- 8.** The average of 6 observations is 45.5. If one new observation is added to the previous observations, then the new average becomes 47. The new observation is

(1) 58      (2) 56  
 (3) 50      (4) 46

(SSC CGL Prelim Exam. 04.02.2007

(First Sitting)

- 9.** The average of five numbers is 140. If one number is excluded, the average of the remaining four numbers is 130. The excluded number is :

(1) 135      (2) 134  
 (3) 180      (4) 150

FCI Assistant Grade-III

Exam. 05.02.2012 (Paper-I)

East Zone (IInd Sitting)

- 10.** The average of five numbers is 7. When three new numbers are included, the average of the eight numbers becomes 8.5. The average of the three new numbers is

(1) 9      (2) 10.5  
 (3) 11      (4) 11.5

(SSC CHSL DEO & LDC

Exam. 28.11.2010 (IInd Sitting)

- 11.** The average of six numbers is 32. If each of the first three numbers is increased by 2 and each of the remaining three numbers is decreased by 4, then the new average is

(1) 35      (2) 34  
 (3) 31      (4) 30

(SSC CHSL DEO & LDC Exam.

11.12.2011 (1st Sitting (Delhi Zone)

- 12.** The mean weight of 34 students of a school is 42 kg. If the weight of the teacher be included, the mean rises by 400 grams. Find the weight of the teacher (in kg).

(1) 55 kg      (2) 57 kg  
 (3) 66 kg      (4) 56 kg

(SSC CHSL DEO & LDC Exam.

21.10.2012 (1st Sitting)

- 13.** If the mean of 4 observations is 20, when a constant 'C' is added to each observation, the mean becomes 22. The value of C is :

(1) 6      (2) -2  
 (3) 2      (4) 4

(SSC CHSL DEO & LDC Exam.

21.10.2012 (IInd Sitting)

- 14.** The average weight of 40 children of a class is 36.2 kg. When three more children with weight 42.3 kg, 39.7 kg and 39.5 kg join the class, the average weight of the 43 children in the class is

(1) 39.2 kg      (2) 36.5 kg  
 (3) 38.35 kg      (4) 37.3 kg

(SSC Delhi Police S.I. (SI)

Exam. 19.08.2012)



**AVERAGE**

- 15.** In a class, the average score of girls in an examination is 73 and that of boys is 71. The average score for the whole class is 71.8. Find the percentage of girls.

(1) 40%                      (2) 50%  
 (3) 55%                      (4) 60%

(SSC Multi-Tasking (Non-Technical) Staff Exam. 27.02.2011)

- 16.** A student finds the average of 10, 2 – digit numbers. If the digits of one of the numbers is interchanged, the average increases by 3.6. The difference between the digits of the 2-digit numbers is

(1) 4                          (2) 3  
 (3) 2                          (4) 5

(SSC CGL Tier-I Exam. 19.10.2014)

- 17.** The average of five numbers is 7. If three new numbers would be added, then the new average comes out to be 8.5. What is the average of those three new numbers?

(1) 9                          (2) 10.5  
 (3) 11                          (4) 11.5

(SSC CPO SI, ASI Online Exam.05.06.2016) (IInd Sitting)

**TYPE-IX**

- 1.** The average age of 14 girls and their teacher's age is 15 years. If the teacher's age is excluded, the average reduces by 1. What is the teacher's age?

(1) 35 years    (2) 32 years  
 (3) 30 years    (4) 29 years

(SSC CGL Prelim Exam. 27.02.2000 (1st Sitting) & SSC CGL Tier I, Exam. 24.04.2013)

- 2.** The average age of four brothers is 12 years. If the age of their mother is also included, the average is increased by 5 years. The age of the mother (in years) is :

(1) 37 years    (2) 43 years  
 (3) 48 years    (4) 53 years

(SSC CGL Prelim Exam. 27.02.2000 (First Sitting))

- 3.** The average age of 8 persons is increased by 2 years, when one of them, whose age is 24 years is replaced by a new person. The age of the new person is :

(1) 42 years    (2) 40 years  
 (3) 38 years    (4) 45 years

(SSC CGL Prelim Exam. 24.02.2002 (First Sitting))

- 4.** The average age of 8 men is increased by 2 years when two of them whose age are 21 and 23 years replaced by two new men. The average age of the two new men is

(1) 22 years    (2) 24 years  
 (3) 28 years    (4) 30 years

(SSC CGL Prelim Exam. 24.02.2002 (Second Sitting))

- 5.** The average age of eleven players of a cricket team decreases by 2 months when two new players are included in the team replacing two players of age 17 years and 20 years. The average age of new player is

(1) 17 years 1 month  
 (2) 17 years 7 months  
 (3) 17 years 11 months  
 (4) 18 years 3 months

(SSC CGL Prelim Exam. 24.02.2002 (Middle Zone) & SSC CGL Exam. 13.11.2005 (IInd sitting))

- 6.** The average age of 20 boys in a class is 12 years. 5 new boys are admitted to the class whose average age is 7 years. The average age of the boys in the class becomes

(1) 8.2 years    (2) 9.5 years  
 (3) 12.5 years    (4) 11 years

(SSC CPO S.I. Exam. 07.09.2003)

- 7.** There are 30 students in a class. The average age of first 10 students is 12.5 years. The average age of the remaining 20 students is 13.1 years. The average age (in years) of the students of the whole class is

(1) 12.5 years    (2) 12.7 years  
 (3) 12.8 years    (4) 12.9 years

(SSC Section Officer (Commercial Audit) Exam. 16.11.2003)

- 8.** The average age of 5 boys is 12 years. The average age of 3 others is 16 years. The average age of all the 8 boys is :

(1)  $13\frac{1}{2}$  years    (2) 14 years

(3)  $12\frac{1}{2}$  years    (4) 13 years

(SSC CGL Prelim Exam. 08.02.2004 (Second Sitting))

- 9.** Out of 10 teachers of a school, one teacher retires and at his place a new teacher of age 25 years joins. As a result of it, the average age of the teachers is reduced by 3 years. The age of the retired teacher is

(1) 60 years    (2) 58 years  
 (3) 56 years    (4) 55 years

(SSC CPO S.I. Exam. 05.09.2004 & SSC CGL Tier-I Exam. 21.04.2013 (1st sitting))

- 10.** The average age of 40 students of a class is 15 years. When 10 new students are admitted, the average is increased by 0.2 year. The average age of the new students is :

(1) 15.2 years    (2) 16 years  
 (3) 16.2 years    (4) 16.4 years

(SSC CPO S.I. Exam. 26.05.2005 & 09.11.2008)

- 11.** The present average age of a family of four members is 36 years. If the present age of the youngest member of the family be 12 years, the average age of the family at the birth of the youngest member was

(1) 48 years    (2) 40 years  
 (3) 32 years    (4) 24 years

(SSC CGL Prelim Exam. 27.07.2008 (First Sitting))

- 12.** The average age of 40 students of a class is 18 years. When 20 new students are admitted to the same class, the average age of the students of the class is increased by 6 months. The average age of newly admitted student is

(1) 19 years  
 (2) 19 years 6 months  
 (3) 20 years  
 (4) 20 years 6 months

(SSC CGL Prelim Exam. 27.07.2008 (Second Sitting))

- 13.** The average age of group of 20 girls is 15 years and that of another group of 25 boys it is 24 years. The average age of the two groups mixed together is

(1) 19.5 years    (2) 20 years  
 (3) 21 years    (4) 21.5 years

(SSC Data Entry Operator Exam. 31.08.2008)



**AVERAGE**

- 14.** The average age of 11 players of a cricket team is increased by 2 months when two of them aged 18 years and 20 years are replaced by two new players. The average age of the new players is
- (1) 19 years 1 month
  - (2) 19 years 6 months
  - (3) 19 years 11 months
  - (4) 19 years 5 months

(SSC CGL Exam. 13.11.2005  
(1st sitting) & SSC CGL Tier-1  
Exam. 26.06.2011 (IInd Sitting))

- 15.** Average age of 8 men is increased by 3 years when two of them whose age are 30 and 34 years are replaced by 2 persons. What is the average age of the 2 persons ?

- (1) 24 years      (2) 32 years
- (3) 44 years      (4) 48 years

(SSC CHSL DEO & LDC Exam.  
28.10.2012 (1st Sitting))

- 16.** The average age of a family of 10 members is 20 years. If the age of the youngest member of the family is 10 years, then the average age of the members of the family just before the birth of the youngest member was approximately

- (1) 27.14 years      (2) 12.5 years
- (3) 14.28 years      (4)  $11\frac{1}{9}$  years

(SSC CHSL DEO & LDC Exam.  
28.10.2012 (1st Sitting))

- 17.** The average age of four boys A, B, C and D is 5 years and the average age of A, B, D, E is 6 years. C is 8 years old. The age of E is (in years)

- (1) 12                  (2) 13
- (3) 14                  (4) 15

(SSC Multi-Tasking Staff  
Exam. 24.03.2013, 1st Sitting)

- 18.** 5 years ago, the average age of P and Q was 15 years. Average age of P, Q and R today is 20 years. How old will R be after 10 years?

- (1) 35 years      (2) 40 years
- (3) 30 years      (4) 50 years

(SSC Graduate Level Tier-I  
Exam. 11.11.2012, 1st Sitting)

- 19.** The average age of a husband and his wife was 23 years at the beginning of their marriage. After five years they have a one-year old child. The average age of the family of three, when the child was born, was

- (1) 23 years      (2) 24 years
- (3) 18 years      (4) 20 years

(SSC Constable (GD)  
Exam. 12.05.2013 1st Sitting)

- 20.** Two years ago the average age of a family of 8 members was 18 years. After the addition of a baby, the average age of the family is same today. What is the age of the baby ?

- (1) 2 years      (2)  $1\frac{1}{2}$  years
- (3) 1 year      (4)  $2\frac{1}{2}$  years

(SSC Constable (GD)  
Exam. 12.05.2013)

- 21.** From a class of 42 boys, a boy aged 10 years goes away and in his place, a new boy is admitted. If on account of this change, the average age of the boys in that class increases by 2 months, the age of the newcomer is :

- (1) 19 years
- (2) 17 years
- (3) 10 years 6 months
- (4) 12 years 2 months

(SSC Multi-Tasking Staff  
Exam. 10.03.2013)

- 22.** The average age of Ram and his two children is 17 years and the average age of Ram's wife and the same children is 16 years. If the age of Ram is 33 years, the age of his wife is (in years):

- (1) 31                  (2) 32
- (3) 35                  (4) 30

(SSC Graduate Level Tier-I  
Exam. 21.04.2013 IInd Sitting)

- 23.** The average age of A and B is 20 years. If A is to be replaced by C, the average would be 19 years. The average age of C and A is 21 years. The ages of A, B and C in order (in years) are

- (1) 18, 22, 20      (2) 18, 20, 22
- (3) 22, 18, 20      (4) 22, 20, 18

(SSC CHSL DEO & LDC Exam.  
10.11.2013, IInd Sitting)

- 24.** In a family of 5 members, the average age at present is 33 years. The youngest member is 9 years old. The average age of the family just before the birth of the youngest member was

- (1) 30 years      (2) 29 years
- (3) 25 years      (4) 24 years

(SSC Graduate Level Tier-I  
Exam. 19.05.2013 1st Sitting)

- 25.** The average age of 12 players of a team is 25 years. If the captain's age is included, the average age increases by 1 year. The age of the captain is :

- (1) 25 yrs.      (2) 38 yrs.
- (3) 36 yrs.      (4) 26 yrs.

(SSC CGL Prelim Exam. 04.07.1999  
(Second Sitting))

- 26.** In a class, there are 40 boys and their average age is 16 years. One boy, aged 17 years, leaving the class and another joining, the average age becomes 15.875 years. The age of the new boy is :

- (1) 12 years      (2) 14.5 years
- (3) 15 years      (4) 17 years

(SSC CGL Prelim Exam. 27.02.2000  
(Second Sitting))

- 27.** The average age of 30 boys in a class is 15 years. One boy, aged 20 years, left the class, but two new boys came in his place whose age differ by 5 years. If the average age of all the boys now in the class becomes 15 years, the age of the younger newcomer is :

- (1) 20 years      (2) 15 years
- (3) 10 years      (4) 8 years

(SSC CGL Prelim Exam. 24.02.2002  
(First Sitting))

- 28.** In a class there are 30 boys and their average age is 17 years. On one boy aged 18 years leaving the class and another joining, the average age becomes 16.9 years. The age of new boy is

- (1) 25 years      (2) 11 years
- (3) 13 years      (4) 15 years

(SSC CHSL (10+2) LDC, DEO  
& PA/SA Exam. 20.12.2015  
(1st Sitting) TF No. 9692918)

- 29.** Average age of 6 sons of a family is 8 years. Average age of sons together with their parents is 22 years. If the father is older than the mother by 8 years, the age of mother (in years) is :

- (1) 44                  (2) 52
- (3) 60                  (4) 68

(SSC CGL Prelim Exam. 11.05.2003  
(First Sitting))





**AVERAGE**

- 30.** Out of 10 teachers of a school, one teacher retires and in his place, a new teacher of age 25 years joins. As a result, average age of teachers reduces by 3 years. The age of the retired teacher is  
 (1) 50 years (2) 55 years  
 (3) 58 years (4) 60 years  
 (SSC CGL Prelim Exam. 11.05.2003 (Second Sitting))
- 31.** 3 years ago, the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family is the same today. The present age of the baby is :  
 (1) 3 years (2) 2 years  
 (3)  $1\frac{1}{2}$  years (4) 1 year  
 (SSC CGL Prelim Exam. 08.02.2004 (First Sitting))
- 32.** The average age of 45 persons is decreased by  $\frac{1}{9}$  year when one of them of 60 years is replaced by a new comer. Then the age of the new comer is :  
 (1) 45 years (2) 55 years  
 (3) 59 years (4) 49 years  
 (SSCCHSL DEO & LDC Exam. 11.12.2011 (IInd Sitting (Delhi Zone)))
- 33.** When the average age of a husband and wife and their son was 42 years, the son got married and a child was born just one year after the marriage. When child turned to be five years then the average age of family became 36 years. What was the age of daughter-in-law at the time of marriage ?  
 (1) 26 years (2) 25 years  
 (3) 24 years (4) 23 years  
 (SSC Section Officer (Commercial Audit) Exam. 25.09.2005)
- 34.** The average age of 30 boys in a class is 15 years. One boy aged 20 years, left the class, but two new boys came in his place whose ages differ by 5 years. If the average age of all the boys now in the class still remains 15 years, the age of the younger newcomer is :  
 (1) 20 years (2) 15 years  
 (3) 10 years (4) 8 years  
 (SSC CGL Prelim Exam. 13.11.2005 (First Sitting))
- 35.** The average age of 24 boys and their teacher is 15 years. When the teacher's age is excluded, the average age decreases by 1 year. The age of the teacher is  
 (1) 38 years (2) 39 years  
 (3) 40 years (4) 41 years  
 (SSC Section Officer (Commercial Audit) Exam. 26.11.2006 (Second Sitting))
- 36.** There were 24 students in a class. One of them, who was 18 years old, left the class and his place was filled up by a newcomer. If the average of the class thereby, was lowered by one month, the age of the newcomer is  
 (1) 14 years (2) 15 years  
 (3) 16 years (4) 17 years  
 (SSC CGL Prelim Exam. 04.02.2007 (First Sitting))
- 37.** The average age of 30 students is 9 years. If the age of their teacher is included, the average age becomes 10 years. The age of the teacher (in years) is  
 (1) 27 (2) 31  
 (3) 35 (4) 40  
 (SSC CGL Prelim Exam. 04.02.2007 (Second Sitting))
- 38.** From a class of 24 boys, a boy, aged 10 years, leaves the class and in his place a new boy is admitted. As a result, the average age of the class is increased by 2 months. What is the age of the new boy ?  
 (1) 12 years (2) 15 years  
 (3) 14 years (4) 13 years  
 (SSC CGL Prelim Exam. 04.02.2007 (Second Sitting))
- 39.** 5 years ago, the average age of A, B, C and D was 45 years. With E joining them now, the average age of all the five is 49 years. How old is E ?  
 (1) 25 years (2) 40 years  
 (3) 45 years (4) 64 years  
 (SSC Section Officer (Commercial Audit) Exam. 30.09.2007 (Second Sitting))
- 40.** In a family, the average age of a father and a mother is 35 years. The average age of the father, mother and their only son is 27 years. What is the age of the son ?  
 (1) 12 years (2) 11 years  
 (3) 10.5 years (4) 10 years  
 (SSC CGL Tier-I Exam. 16.05.2010 (First Sitting))
- 41.** The average age of 9 students and their teacher is 16 years. The average age of the first four students is 19 years and that of the last five is 10 years. The teacher's age is  
 (1) 36 years (2) 34 years  
 (3) 30 years (4) 28 years  
 (SSC (South Zone) Investigator Exam 12.09.2010)
- 42.** Five years ago, the average age of P, Q and R was 25 years and seven years ago, the average age of Q and R was 20 years. The present age of P is  
 (1) 36 years (2) 29 years  
 (3) 24 years (4) 21 years  
 (SSC Data Entry Operator Exam. 31.08.2008)
- 43.** The average age of eleven cricket players is 20 years. If the age of the coach is also included, the average age increases by 10%. The age of the coach is  
 (1) 48 years (2) 44 years  
 (3) 40 years (4) 36 years  
 (SSC Data Entry Operator Exam. 02.08.2009)
- 44.** The average age of a husband and a wife was 27 years when they married 4 years ago. The average age of the husband, the wife and a new-born child is 21 years now. The present age of the child is  
 (1) 4 years (2) 3 years  
 (3) 2 years (4) 1 year  
 (SSC Data Entry Operator Exam. 02.08.2009)
- 45.** The average age of a husband and wife, who were married 4 years ago, was 25 years at the time of their marriage. The average age of the family consisting of husband, wife and a child, born during the interval is 20 years today. The age of the child is  
 (1) 1 year (2) 2 years  
 (3) 2.5 years (4) 3 years  
 (SSC CHSL DEO & LDC Exam. 28.11.2010 (IInd Sitting))
- 46.** Five years ago, the average age of P and Q was 25. The average age of P, Q and R today is 25. Age of R after 5 years will be  
 (1) 15 years (2) 20 years  
 (3) 40 years (4) 35 years  
 (SSC CHSL DEO & LDC Exam. 04.12.2011 (Ist Sitting (North Zone)))



**AVERAGE**

- 47.** In a school, the average age of students is 6 years, and the average age of 12 teachers is 40 years. If the average age of the combined group of all the teachers and students is 7 years, then the number of students is :

(1) 396            (2) 400  
 (3) 408            (4) 416

(SSC CGL Prelim Exam. 13.11.2005  
 (First Sitting))

- 48.** In a school with 600 students, the average age of the boys is 12 years and that of the girls is 11 years. If the average age of the school is 11 years and 9 months, then the number of girls in the school is

(1) 450            (2) 150  
 (3) 250            (4) 350

(SSC Graduate Level Tier-II  
 Exam.16.09.2012)

- 49.** If out of 10 selected students for an examination, 3 were of 20 years, age, 4 of 21 and 3 of 22 years, the average age of the group is

(1) 22 years        (2) 21 years  
 (3) 21.5 years      (4) 20 years

(SSC CGL Tier-I

Re-Exam. (2013) 27.04.2014)

- 50.** 3 years ago, the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family is same today. The present age of the baby is

(1) 1 year            (2)  $1\frac{1}{2}$  year

(3) 2 years            (4) 3 years

(SSC CGL Tier-I

Re-Exam. (2013) 27.04.2014)

- 51.** A man had 7 children. When their average age was 12 years, a child aged 6 years died. The average age of remaining six children is

(1) 13 years        (2) 10 years  
 (3) 11 years        (4) 14 years

(SSC CGL Tier-I Re-Exam. (2013)  
 20.07.2014 (1st Sitting))

- 52.** The average age of a cricket team of 11 players is the same as it was 3 years back because 3 of the players whose current average age of 33 years were replaced by 3 youngsters. The average age of the newcomers is

(1) 23 years        (2) 21 years  
 (3) 22 years        (4) 20 years

(SSC CGL Tier-I Re-Exam. (2013)  
 20.07.2014 (1st Sitting))

- 53.** The frequency distribution data is given below. If the average age is 17 years, the value of  $m$  is

Age (in years) : 8    20    26    29

Number of people : 3    2     $m$     1

(1) 1                      (2) 2

(3) 3                      (4) 4

(SSC CGL Tier-II Exam. 21.09.2014)

- 54.** After replacing an old member by a new member, it was found that the average age of five members of a club is the same as it was 3 years ago. The difference between the ages of the replaced and the new members is

(1) 2 years            (2) 4 years  
 (3) 8 years            (4) 15 years

(SSC CGL Tier-II Exam. 21.09.2014)

- 55.** Three years ago, the average age of a family of 5 members was 17 years. A baby having been born the average age of the family is the same today. The present age of the baby (in years) is

(1) 2                      (2) 2.4

(3) 3                      (4) 1.5

(SSC CAPFs SI, CISF ASI & Delhi

Police SI Exam. 22.06.2014)

- 56.** 3 years ago the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family is the same today. The present age of the baby is

(1) 1 year            (2)  $1\frac{1}{2}$  years

(3) 2 years            (4) 3 years

(SSC CHSL DEO & LDC

Exam. 9.11.2014)

- 57.** Three years ago the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family remains the same today. The age of the baby today is

(1) 3 years            (2) 2 years

(3) 1 year            (4) 1.5 years

(SSC CHSL DEO & LDC

Exam. 16.11.2014)

- 58.** The average age of P, Q and R is 5 years more than R's age. If the total ages of P and Q together is 39 years, then R's age is

(1) 12 years            (2) 24 years

(3) 16 years            (4) 14 years

(SSC CHSL DEO Exam. 16.11.2014)

(1st Sitting)

- 59.** Three years ago, the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family is the same today. The present age of the baby (in year/s) is

(1) 1                      (2)  $1\frac{1}{2}$

(3) 2                      (4) 3

(SSC CHSL (10+2) DEO & LDC

Exam. 16.11.2014 , 1st Sitting

TF No. 333 LO 2)

- 60.** The average age of a husband and his wife was 23 years at the time of their marriage. After five years they have a one year old child. The average age of the family now is

(1) 29.3 years        (2) 19 years

(3) 23 years            (4) 28.5 years

(SSC Constable (GD)

Exam, 04.10.2015, 11nd Sitting)

- 61.** The average age of 30 students of a class is 14 years 4 months. After admission of 5 new students in the class the average becomes 13 years 9 months. The youngest one of the five new students is 9 years 11 months old. The average age of the remaining 4 new students is

(1) 11 years 2 months

(2) 13 years 6 months

(3) 12 years 4 months

(4) 10 years 4 months

(SSC CGL Tier-II Exam,

25.10.2015, TF No. 1099685)

- 62.** Out of 10 teachers of a school, one teacher retires and in place of him a new teacher 25 years old joins. As a result of it average age of the teachers reduces by 3 years. Age of the retired teacher (in years) is :

(1) 55                      (2) 60

(3) 58                      (4) 56

(SSC CHSL (10+2) LDC, DEO

& PA/SA Exam, 15.11.2015

(1st Sitting) TF No. 6636838)

- 63.** The average age of mother and her six children is 12 years, which is reduced by 5 years if the age of the mother is excluded. The age of the mother (in years) is :

(1) 50                      (2) 40

(3) 48                      (4) 42

(SSC CHSL (10+2) LDC, DEO

& PA/SA Exam, 06.12.2015

(1st Sitting) TF No. 1375232)



**AVERAGE**

- 64.** The average age of a family with 5 members is 28 years. If one of the members of age 20 years is excluded, the average age of the family becomes

(1) 25 years      (2) 20 years  
 (3) 30 years      (4) 24 years

(SSC CPO Exam. 06.06.2016)  
 (1st Sitting)

- 65.** The average age of husband, wife and their child 3 years ago was 27 years and that of wife and the child 5 years ago was 20 years. The present age of the husband is :

(1) 50 years  
 (2) 40 years  
 (3) 35 years

(4) None of the options

(SSC CAPFs (CPO) SI & ASI,  
 Delhi Police Exam. 20.03.2016)  
 (IIInd Sitting)

- 66.** Pushpa is twice as old as Rita was 2 years ago. If difference between their ages is 2 years, how old is Pushpa today?

(1) 6 years      (2) 8 years  
 (3) 10 years      (4) 12 years

(SSC CGL Tier-I (CBE)  
 Exam. 27.08.2016) (IIInd Sitting)

- 67.** The average age of 10 children is 9 years 9 months. The average age of 9 children is 8 years 11 months. What is the age of the tenth child ?

(1) 17 years 3 months  
 (2) 18 years 4 months  
 (3) 17 years 5 months  
 (4) 18 years 3 months

(SSC CGL Tier-I (CBE)  
 Exam. 30.08.2016) (1st Sitting)

- 68.** The sum of the ages of mother and her daughter is 60 years. 12 years ago the mother was eight times as old as her daughter. How old is the daughter at present?

(1) 20 years      (2) 28 years  
 (3) 16 years      (4) 12 years

(SSC CGL Tier-I (CBE)  
 Exam. 02.09.2016) (IIInd Sitting)

- 69.** The average age of eight teachers in a school is 40 years. A teacher among them died at the age of 55 years whereas another teacher whose age was 39 years joins them. The average age of the teachers in the school now is (in years)

(1) 35              (2) 36  
 (3) 38              (4) 39

(SSC CGL Tier-I (CBE)  
 Exam. 04.09.2016) (1st Sitting)

- 70.** If the average age of four children is 12 years and the average age of these children and their father is 20 years, what is the age of the father ?

(1) 52 years      (2) 48 years  
 (3) 62 years      (4) 54 years

(SSC CGL Tier-I (CBE)  
 Exam. 06.09.2016) (1st Sitting)

- 71.** The average age of 36 students in a group is 14 years. When the teacher's age is included in it, the average increases by one. The teacher's age in years is

(1) 31              (2) 51  
 (3) 36              (4) 50

(SSC CGL Tier-I (CBE)  
 Exam. 07.09.2016) (1st Sitting)

- 72.** The average age of 30 boys in a class is 10 years. If the age of their teacher is also included, the average increases by one year. The teacher's age in years is

(1) 38              (2) 40  
 (3) 30              (4) 41

(SSC CGL Tier-I (CBE)  
 Exam. 01.09.2016) (IIInd Sitting)

- 73.** Ram is 20 years younger than Shyam. 5 years ago, the ratio of their ages was 3 : 5. The sum of their present ages is :

(1) 75 years      (2) 80 years  
 (3) 90 years      (4) 95 years

(SSC CGL Tier-I (CBE)  
 Exam. 30.08.2016) (IIIrd Sitting)

- 74.** Three years ago, the average age of a family of 5 members was 17 years. A baby having been born, the average age of the family is the same today. The present age of the baby is :

(1) 2 years      (2) 2.4 years  
 (3) 3 years      (4) 1.5 years

(SSC CGL Tier-I (CBE)  
 Exam. 30.08.2016) (IIIrd Sitting)

- 75.** Seven years ago, the average age of A, B and C was 51 years. If A is 3 years older than B and B is 3 years older than C then the present ages of A, B and C are (in years)

(1) 61, 58 and 55  
 (2) 54, 51, and 48  
 (3) 55, 58, and 61  
 (4) 48, 51 and 54

(SSC CGL Tier-I (CBE)  
 Exam. 03.09.2016) (IIIrd Sitting)

- 76.** Numbers of boys and girls are 'x' and 'y' respectively. Ages of a girl and a boy are 'a' years and 'b' years respectively. The average age (in years) of all boys and girls is

(1)  $\frac{x+y}{bx+ay}$       (2)  $\frac{bx+ay}{x+y}$

(3)  $\frac{ax+by}{x+y}$       (4)  $\frac{x+y}{ax+by}$

(SSC CGL Tier-I (CBE)  
 Exam. 06.09.2016) (IIIrd Sitting)

- 77.** The average age of a class of 39 students is 15 years. If the age of the teacher is included, then the average increases by 3 months. Find the age of the teacher.

(1) 30 years      (2) 25 years  
 (3) 35 years      (4) 40 years

(SSC CGL Tier-I (CBE)  
 Exam. 07.09.2016) (IIInd Sitting)

- 78.** The average age of 3 friends is 23 years. Even if the age of 4th friend is added, the average age remains the same. Then the age of the fourth friend is :

(1) 20 years      (2) 21 years  
 (3) 22 years      (4) 23 years

(SSC CGL Tier-I (CBE)  
 Exam. 27.10.2016) (1st Sitting)

- 79.** The average age of the boys in a class is 18 years. The average age of the girls in that class is 12 years. If the ratio of the number of boys and girls in that class is 3 : 2, then the average age of the class is :

(1) 15. 6 years      (2) 16. 5 years  
 (3) 15 years      (4) 16 years

(SSC CGL Tier-I (CBE)  
 Exam. 27.10.2016) (1st Sitting)





**AVERAGE**

**TYPE-X**

1. A company produces an average of 4000 items per month for the first 3 months. How much items, it must produce on an average per month over the next 9 months to average 4375 items per month over the whole year?

(1) 4500                      (2) 4600  
 (3) 4680                      (4) 4710

(SSC CGL Prelim Exam. 04.07.1999  
 (First Sitting))

2. There are in all, 10 balls; some of them are red and the others white. The average cost of all balls is ₹ 28. If the average cost of red balls is ₹ 25 and that of white balls is ₹ 30, the number of white balls is :

(1) 3                              (2) 5  
 (3) 6                              (4) 7

(SSC CHSL DEO & LDC

Exam. 11.12.2011 (IInd Sitting  
 (Delhi Zone))

3. The arithmetic mean of the scores of a group of students in a test was 52. The brightest 20% of them secured a mean score of 80 and the dullest 25% a mean score of 31. The mean score of remaining 55% is :

(1) 45%                      (2) 50%  
 (3) 51.4% approx.  
 (4) 54.6% approx.

(SSC CGL Prelim Exam. 27.02.2000  
 (First Sitting))

4. The average of marks obtained by 120 candidates in a certain examination is 35. If the average marks obtained by passed candidates are 39 and those of the failed candidates are 15, what is the number of candidates who passed the examination ?

(1) 100                      (2) 120  
 (3) 150                      (4) 140

(SSC CGL Prelim Exam. 24.02.2002  
 (Second Sitting))

5. A man's pension on retirement from service is equal to half the average salary during last 3 years of his service. His salary from 1-1-1983 is ₹ 380 per month with increment of ₹ 40 due on 1-10-83, 1-10-84 and 1-10-85. If he retires on 1-1-86, what pension does he draw per month?

(1) ₹ 205                      (2) ₹ 215  
 (3) ₹ 225                      (4) ₹ 230

(SSC Graduate Level Tier-I  
 Exam. 21.04.2013 IInd Sitting)

6. The average salary of all the workers in a workshop is ₹ 8000. The average salary of 7 technicians is ₹ 12000 and the average salary of the rest is ₹ 6000. The total number of workers in the workshop is

(1) 20                      (2) 21  
 (3) 23                      (4) 22

(SSC CGL Prelim Exam. 11.05.2003  
 (Second Sitting))

7. The average age of 15 students of a class is 15 years. Out of these the average age of 5 students is 14 years and that of the other 9 students is 16 years. The age of the 15th student is

(1) 11 years                      (2) 15 years

(3)  $15\frac{2}{7}$  years                      (4) 14 years

(SSC CGL Prelim Exam. 11.05.2003  
 (Second Sitting))

8. In a family of 8 adults and some minors, the average consumption of rice per head per month is 10.8 kg; while the average consumption for adults is 15 kg per head and for minors it is 6 kg per head. The number of minors in the family is :

(1) 8                              (2) 6  
 (3) 7                              (4) 9

(SSC CGL Prelim Exam. 08.02.2004  
 (First Sitting))

9. The average monthly income (in ₹) of certain agricultural workers is S and that of other workers is T. The number of agricultural workers is 11 times that of other workers. Then, the average monthly income (in ₹) of all the workers is :

(1)  $\frac{S+11T}{12}$                       (2)  $\frac{S+T}{12}$

(3)  $\frac{11S+T}{12}$                       (4)  $\frac{1}{11S} + T$

(SSC CGL Prelim Exam. 08.02.2004  
 (Second Sitting))

10. The average of marks scored by the students of a class is 68. The average of marks of the girls in the class is 80 and that of boys is 60. What is the percentage of boys in the class ?

(1) 40 %                      (2) 60 %  
 (3) 65 %                      (4) 70 %

(SSC CGL Prelim Exam. 13.11.2005  
 (Second Sitting))

11. The average monthly salary of the workers in a workshop is Rs. 8,500. If the average monthly salary of 7 technicians is Rs. 10,000 and average monthly salary of the rest is Rs. 7,800, the total number of workers in the workshop is

(1) 18                      (2) 20  
 (3) 22                      (4) 24

(SSC CGL Prelim Exam. 13.11.2005  
 (Second Sitting))

12. The average pocket money of 3 friends A, B, C is ₹ 80 in a particular month. If B spends double and C spends triple of what A spends during that month and if the average of their unspent pocket money is ₹ 60, then A spends (in ₹)

(1) ₹ 10                      (2) ₹ 20  
 (3) ₹ 30                      (4) ₹ 40

(SSC Assistant Grade-III

Exam. 11.11.2012 (IInd Sitting))

13. The average score of a-class of boys and girls in an examination is A. The ratio of boys and girls in the class is 3 : 1. If the average score of the boys is A + 1, the average score of the girls is

(1) A + 1                      (2) A - 1  
 (3) A + 3                      (4) A - 3

(SSC Section Officer (Commercial  
 Audit) Exam. 26.11.2006  
 (Second Sitting))

14. If the average of m numbers is  $n^2$  and that of n numbers is  $m^2$ , then average of (m + n) numbers is

(1)  $\frac{m}{n}$                       (2) m + n

(3) mn                      (4) m - n

(SSC Section Officer (Commercial  
 Audit) Exam. 26.11.2006  
 (Second Sitting))

15. The average of the three numbers x, y and z is 45. x is greater than the average of y and z by 9. The average of y and z is greater than y by 2. Then the difference of x and z is

(1) 3                              (2) 5  
 (3) 7                              (4) 11

(SSC CPO (SI, ASI & Intelligence  
 Officer) Exam 28.08.2011 (Paper-I))

16. The average expenditure of a man for the first five months of a year is ₹ 5,000 and for the next seven months it is ₹ 5,400. He saves ₹ 2,300 during the year. His average monthly income is :

(1) ₹ 5,425                      (2) ₹ 5,500  
 (3) ₹ 5,446                      (4) ₹ 5,600

(SSC CPO S.I. Exam. 16.12.2007)



**AVERAGE**

- 17.** The average of eight numbers is 20. If the sum of first two numbers is 31, the average of the next

three numbers is  $21\frac{1}{3}$  and the seventh and eighth numbers exceed the sixth number by 4 and 7 respectively, then the eighth number is

- (1) 20                      (2) 25  
 (3) 21.6                    (4) 25.3

(SSC CGL Prelim Exam. 27.07.2008  
 (First Sitting))

- 18.** 30 pens and 75 pencils altogether were purchased for ₹ 510. If the average price of a pencil was ₹ 2, what was the average price of a pen ?

- (1) ₹ 9                      (2) ₹ 10  
 (3) ₹ 11                    (4) ₹ 12

(SSC CPO S.I.  
 Exam 12.12.2010 (Paper-I))

- 19.** The average mathematics marks of two Sections A and B of Class IX in the annual examination is 74. The average marks of Section A is 77.5 and that of Section B is 70. The ratio of the number of students of Section A and B is

- (1) 7 : 8                      (2) 7 : 5  
 (3) 8 : 7                      (4) 8 : 5

(SSC CGL Tier-1 Exam 19.06.2011  
 (First Sitting))

- 20.** In a prep school, the average weight of 30 girls in a class among 50 students is 16 kg and that of the remaining students is 15.5 kg. What is the average weight of all the students in the class ?

- (1) 15.2 kg.                      (2) 15.8 kg.  
 (3) 15.4 kg.                      (4) 15.6 kg.

(SSC Constable (GD)  
 Exam. 12.05.2013 1st Sitting)

- 21.** The average salary of all staff of a school is ₹ 10,000. The average salary of 20 teaching staff is ₹ 12,000 and that of non-teaching staff is ₹ 5000, the number of non-teaching staff will be

- (1) 7                              (2) 8  
 (3) 10                            (4) 12

(SSC Multi-Tasking Staff  
 Exam. 17.03.2013, Kolkata Region)

- 22.** B was born when A was 4 years 7 months old and C was born when B was 3 years 4 months old. When C was 5 years 2 months old, then their average age was

- (1) 8 years 9 months  
 (2) 7 years 3 months

- (3) 8 years 7 months  
 (4) 8 years 11 months

(SSC Constable (GD) & Rifleman  
 (GD) Exam. 22.04.2012 (IInd Sitting))

- 23.** If the average of  $x$  and  $\frac{1}{x}$  ( $x \neq 0$ ) is  $M$ , then the average of  $x^2$  and

$\frac{1}{x^2}$  is :

- (1)  $1 - M^2$                       (2)  $1 - 2M$   
 (3)  $2M^2 - 1$                     (4)  $2M^2 + 1$

(SSC CHSL DEO & LDC  
 Exam. 11.12.2011 (IInd Sitting  
 (East Zone)))

- 24.** 5 members of a team are weighed consecutively and their average weight calculated after each member is weighed. If the average weight increases by one kg each time, how much heavier is the last player than the first one ?

- (1) 4 kg                      (2) 20 kg  
 (3) 8 kg                      (4) 5 kg

(SSC Graduate Level Tier-II  
 Exam. 16.09.2012)

- 25.** Out of nine persons, 8 persons spent ₹ 30 each for their meals. The ninth one spent ₹ 20 more than the average expenditure of all the nine. The total money spent by all of them was

- (1) ₹ 260                      (2) ₹ 290  
 (3) ₹ 292.50                    (4) ₹ 400.50

(SSC Graduate Level Tier-II  
 Exam. 16.09.2012)

- 26.** In the afternoon, a student read 100 pages at the rate of 60 pages per hour. In the evening, when she was tired, she read 100 more pages at the rate of 40 pages per hour. What was her average rate of reading, in pages per hour ?

- (1) 60                              (2) 70  
 (3) 48                              (4) 50

(SSC CHSL DEO & LDC  
 Exam. 21.10.2012 (1st Sitting))

- 27.** Ram aims to score an average of 80 marks in quarterly and half yearly exams. But his average in quarterly is 3 marks less than his target and that in half yearly is 2 marks more than his aim. The difference between the total marks scored in both the exams is 25. Total marks aimed by Ram is :

- (1) 400                              (2) 410  
 (3) 420                              (4) 380

(SSC CHSL DEO & LDC  
 Exam. 21.10.2012 (IInd Sitting))

- 28.** While purchasing one item costing ₹400, one has to pay sales tax at 7% and on another costing ₹ 6400, the sales tax was 9%. The per cent of sales tax one has to pay, taking these items together on an average is :

- (1)  $8\frac{13}{17}$                               (2)  $8\frac{15}{17}$

- (3)  $8\frac{1}{2}$                                   (4) 8

(SSC CHSL DEO & LDC  
 Exam. 21.10.2012 (IInd Sitting))

- 29.** On mixing two classes A and B of students having average marks 25 and 40 respectively, the overall average obtained is 30. Find the ratio of the students in the classes A and B.

- (1) 2 : 1                              (2) 5 : 8  
 (3) 5 : 6                              (4) 3 : 4

(SSC CHSL DEO & LDC  
 Exam. 04.11.2012, IInd Sitting)

- 30.** A man purchases milk for three consecutive years. In the first year, he purchases milk at the rate of ₹ 7.50 per litre, in the second year, at the rate of ₹ 8.00 per litre and in the third year, at ₹ 8.50 per litre. If he purchases milk worth ₹ 4,080 each year, the average price of milk per litre for the three years is

- (1) ₹ 7.68                              (2) ₹ 7.98  
 (3) ₹ 7.54                              (4) ₹ 7.83

(SSC Delhi Police S.I.  
 (SI) Exam. 19.08.2012)

- 31.** A fruit seller sold big, medium and small sized apples for ₹ 15, ₹ 10 and ₹ 5 respectively. The total number of apples sold were in the ratio 3 : 2 : 5. Find the average cost of an apple.

- (1) 8                                  (2) 10  
 (3) 9                                  (4) 7

(SSC CHSL DEO & LDC  
 Exam. 21.10.2012, IInd Sitting)

- 32.** A man purchased 7 bags of rice at the rate of ₹ 800 each, 8 bags of rice at ₹ 1000 each and 5 bags of rice at the rate of ₹ 1200 each. What is the average cost of one bag of rice ?

- (1) ₹ 1000                              (2) ₹ 980  
 (3) ₹ 1120                              (4) ₹ 1050

(SSC CHSL DEO Exam. 02.11.2014  
 (1st Sitting))



**AVERAGE**

- 33.** The average (arithmetic mean) of  $3^{30}$ ,  $3^{60}$  and  $3^{90}$  is

(1)  $3^{27} + 3^{57} + 3^{87}$   
 (2)  $3^{60}$   
 (3)  $3^{29} + 3^{59} + 3^{89}$   
 (4)  $3^{177}$

(SSC CGL Tier-II Exam. 12.04.2015  
TF No. 567 TL 9)

- 34.** 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

(1) ₹ 510                      (2) ₹ 310  
 (3) ₹ 410                      (4) ₹ 610

(SSC CGL Tier-II Exam,  
2014 12.04.2015 (Kolkata Region)  
TF No. 789 TH 7)

- 35.** In an examination average marks obtained by the girls of a class is 85 and the average marks obtained by the boys of the same class is 87. If the girls and boys are in the ratio 4 : 5, average marks of the whole class (approximately) is closest to

(1) 85.9                      (2) 86.1  
 (3) 86.4                      (4) 86.5

(SSC CGL Tier-II Exam,  
25.10.2015, TF No. 1099685)

- 36.** A shop of electronic goods is closed on Monday. The average sales per day for remaining six days of a week is ₹ 15640 and the average sale on Tuesday to Saturday is ₹ 14124. The sales on Sunday is

(1) ₹ 21704    (2) Data inadequate  
 (3) ₹ 23220    (4) ₹ 20188

(SSC CHSL (10+2) LDC, DEO & PA/SA  
Exam. 01.11.2015, IInd Sitting)

- 37.** Fifteen movie theatres average 600 customers per theatre per day. If six of the theatres close down but the total theatre attendance stays the same, then the average daily attendance per theatre among the remaining theatres is

(1) 900                      (2) 1000  
 (3) 1100                      (4) 1200

(SSC CGL Tier-II Online  
Exam.01.12.2016)

- 38.** Last year, 5 companies had an average of 16 non working days each. This year, 3 companies had 10 more non working days each, and 2 companies had 5 fewer non working days each. What was the average number of non working days given by the same companies this year ?

(1) 12                      (2) 18  
 (3) 20                      (4) 22

(SSC CPO SI & ASI, Online  
Exam. 06.06.2016) (IInd Sitting)

- 39.** On 24th May, 2008 the maximum temperature of Delhi, Kolkata and Mumbai were recorded as 35°C, 33°C and 34°C respectively. What was the maximum temperature of Chennai so that the average maximum temperature of those cities would be 35°?

(1) 34° C                      (2) 35° C  
 (3) 36° C                      (4) 38° C

(SSC CGL Tier-I (CBE)  
Exam. 03.09.2016) (IInd Sitting)

- 40.** 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

(1) Rs.106.25    (2) Rs. 156.25  
 (3) Rs. 56.25    (4) Rs. 206.25

(SSC CGL Tier-I (CBE)  
Exam. 02.09.2016) (IInd Sitting)

- 41.** A and B have their annual average income Rs. 80,000.

B and C have their annual average income Rs. 75,000.

C and A have their annual average income Rs. 78,000.

The annual income of A is

(1) Rs. 81000    (2) Rs. 82000  
 (3) Rs. 83000    (4) Rs. 84000

(SSC CGL Tier-II (CBE)  
Exam. 30.11.2016)

- 42.** The average (arithmetic mean) amount of savings of ten students is Rs. 600. Three of the students have no savings at all and each of the others have at least Rs. 250 including Nihar, who has exactly Rs. 1300. The largest amount, in Rs., that any one student could have saved is

(1) Rs. 3250                      (2) Rs. 3450  
 (3) Rs. 3650                      (4) Rs. 3850

(SSC CGL Tier-II (CBE)  
Exam. 30.11.2016)

- 43.** An army of 12000 consists of Europeans and Indians. The average height of a European is 5ft 10 inches and that of an Indian is 5ft 9 inches and that of the

whole army is  $5\text{ft } 9\frac{3}{4}$  inches.

Then the number of Indians in the army is

(1) 3000                      (2) 4000  
 (3) 5500                      (4) 2700

(SSC CGL Tier-II (CBE)  
Exam. 30.11.2016)

- 44.** The mean of 100 observations was calculated as 40. It was found later on that one of the observations was misread as 83 instead of 53. The correct mean is :

(1) 39                      (2) 39.7  
 (3) 40.3                      (4) 42.7

(SSC CGL Tier-I (CBE)  
Exam. 28.08.2016) (IInd Sitting)

- 45.** Visitors to a show were charged Rs. 15 each on the first day, Rs. 7.50 on the second day, Rs. 2.50 on the third day and total attendance on three days were in the ratio 2 : 5 : 13 respectively. The average charge per person for the entire three days is

(1) Rs. 5                      (2) Rs. 5.50  
 (3) Rs. 6                      (4) Rs. 7

(SSC CGL Tier-I (CBE)  
Exam. 09.09.2016) (IInd Sitting)

- 46.** The average weight of 10 parcels is 1.7 kg. Addition of another new parcel reduces the average weight by 60 gram. What is the weight in kg. of the new parcel?

(1) 1.04                      (2) 1.08  
 (3) 1.4                      (4) 1.8

(SSC CGL Tier-I (CBE)  
Exam. 10.09.2016) (IInd Sitting)

- 47.** The average temperature of Monday, Tuesday, Wednesday and Thursday is 60°. The average temperature for Tuesday, Wednesday, Thursday and Friday is 63°. If the ratio of temperature for Monday and Friday is 21 : 25, then what is the temperature of Friday ?

(1) 70°                      (2) 73°  
 (3) 75°                      (4) 78°

(SSC CGL Tier-I (CBE)  
Exam. 11.09.2016) (IInd Sitting)

- 48.** A team of 8 persons joins in a shooting competition. The best marksman scored 85 points. If he had scored 92 points, the average score for the team would have been 84. The number of points the team scored was

(1) 672                      (2) 665  
 (3) 645                      (4) 588

(SSC CGL Tier-II (CBE)  
Exam. 12.01.2017)

- 49.** A librarian purchased 60 story books for his library. But he found that he could get 4 extra books by spending Rs. 336 more and then the overall average price per book would be reduced by Re 1. The previous average price of each book was

(1) Rs. 84                      (2) Rs. 83  
 (3) Rs. 68                      (4) Rs. 100

(SSC CGL Tier-II (CBE)  
Exam. 12.01.2017)





**AVERAGE**

50. The average weight of 3 men A, B and C is 84 kg. Another man D joins the group and the average now becomes 80 kg. If another man E whose weight is 3 kg more than that of D, replaces A then the average weight of B, C, D and E becomes 79 kg. What is the weight of A?

- (1) 70 kg.                      (2) 72 kg.  
 (3) 75 kg.                      (4) 80 kg.

(SSC CGL Tier-II (CBE)  
Exam. 12.01.2017)

**SHORT ANSWERS**

**TYPE-I**

1. (2)	2. (3)	3. (1)	4. (1)
5. (4)	6. (4)	7. (3)	8. (2)
9. (2)	10. (3)	11. (4)	12. (2)
13. (2)	14. (2)	15. (2)	16. (2)
17. (1)	18. (1)	19. (1)	20. (3)
21. (1)	22. (1)	23. (2)	24. (1)
25. (2)	26. (3)	27. (3)	28. (4)
29. (2)	30. (4)	31. (2)	32. (1)
33. (3)	34. (3)	35. (3)	36. (4)
37. (3)	38. (3)	39. (2)	40. (2)
41. (1)	42. (2)	43. (1)	44. (4)
45. (4)	46. (2)	47. (3)	48. (1)
49. (3)	50. (2)	51. (1)	52. (4)
53. (2)	54. (2)	55. (3)	56. (3)
57. (3)	58. (4)	59. (4)	60. (1)
61. (1)	62. (4)	63. (2)	64. (4)
65. (2)			

**TYPE-II**

1. (3)	2. (3)	3. (3)	4. (2)
5. (4)	6. (3)	7. (2)	8. (4)
9. (4)	10. (2)	11. (2)	12. (4)
13. (2)	14. (3)	15. (3)	16. (1)
17. (3)	18. (1)	19. (1)	20. (1)
21. (2)	22. (2)	23. (4)	24. (2)
25. (3)	26. (4)		

**TYPE-III**

1. (2)	2. (4)	3. (4)	4. (3)
5. (2)	6. (4)	7. (4)	8. (3)
9. (4)	10. (3)	11. (2)	12. (2)

13. (2)	14. (1)	15. (4)	16. (4)
17. (3)	18. (4)	19. (1)	20. (4)
21. (2)	22. (1)	23. (3)	24. (1)
25. (2)	26. (2)	27. (2)	28. (2)
29. (2)	30. (1)		

**TYPE-IV**

1. (1)	2. (3)	3. (1)	4. (2)
5. (4)	6. (2)	7. (3)	8. (2)
9. (2)	10. (4)	11. (3)	12. (1)
13. (2)	14. (3)	15. (2)	

**TYPE-V**

1. (2)	2. (2)	3. (3)	4. (1)
5. (3)	6. (3)	7. (3)	8. (2)
9. (4)	10. (4)	11. (1)	12. (4)
13. (1)	14. (3)	15. (2)	16. (3)
17. (2)	18. (2)		

**TYPE-VI**

1. (3)	2. (3)	3. (3)	4. (3)
5. (4)	6. (3)	7. (4)	8. (2)
9. (3)	10. (2)	11. (1)	12. (3)
13. (1)	14. (3)	15. (1)	16. (3)
17. (1)	18. (1)	19. (3)	20. (2)
21. (3)	22. (1)	23. (1)	24. (3)
25. (1)	26. (3)	27. (4)	28. (3)
29. (4)	30. (4)	31. (2)	32. (3)
33. (3)	34. (1)	35. (4)	36. (4)
37. (1)	38. (2)	39. (2)	40. (3)
41. (1)	42. (2)		

**TYPE-VII**

1. (3)	2. (1)	3. (3)	4. (2)
5. (3)	6. (2)	7. (3)	8. (4)
9. (4)	10. (3)	11. (2)	12. (3)
13. (2)	14. (2)	15. (3)	16. (4)
17. (4)	18. (1)	19. (4)	20. (1)
21. (3)	22. (4)	23. (3)	24. (3)
25. (3)	26. (3)	27. (3)	

**TYPE-VIII**

1. (4)	2. (2)	3. (3)	4. (3)
5. (3)	6. (1)	7. (4)	8. (2)
9. (3)	10. (3)	11. (3)	12. (4)
13. (3)	14. (2)	15. (1)	16. (1)
17. (3)			

**TYPE-IX**

1. (4)	2. (1)	3. (2)	4. (4)
5. (2)	6. (4)	7. (4)	8. (1)
9. (4)	10. (2)	11. (3)	12. (2)
13. (2)	14. (3)	15. (3)	16. (4)
17. (1)	18. (3)	19. (3)	20. (1)
21. (2)	22. (4)	23. (3)	24. (1)
25. (2)	26. (1)	27. (2)	28. (4)
29. (3)	30. (2)	31. (2)	32. (2)
33. (3)	34. (2)	35. (2)	36. (3)
37. (4)	38. (3)	39. (3)	40. (2)
41. (2)	42. (1)	43. (2)	44. (4)
45. (2)	46. (2)	47. (1)	48. (2)
49. (2)	50. (3)	51. (1)	52. (3)
53. (1)	54. (4)	55. (1)	56. (3)
57. (2)	58. (1)	59. (3)	60. (2)
61. (4)	62. (1)	63. (4)	64. (3)
65. (2)	66. (2)	67. (1)	68. (3)
69. (3)	70. (1)	71. (2)	72. (4)
73. (3)	74. (1)	75. (1)	76. (3)
77. (2)	78. (4)	79. (1)	

**TYPE-X**

1. (1)	2. (3)	3. (3)	4. (1)
5. (2)	6. (2)	7. (1)	8. (3)
9. (3)	10. (2)	11. (3)	12. (1)
13. (4)	14. (3)	15. (3)	16. (1)
17. (2)	18. (4)	19. (3)	20. (2)
21. (2)	22. (4)	23. (3)	24. (3)
25. (3)	26. (3)	27. (1)	28. (2)
29. (1)	30. (2)	31. (3)	32. (2)
33. (3)	34. (3)	35. (2)	36. (3)
37. (2)	38. (3)	39. (4)	40. (2)
41. (3)	42. (2)	43. (1)	44. (2)
45. (1)	46. (1)	47. (3)	48. (2)
49. (4)	50. (3)		



**AVERAGE**

**EXPLANATIONS**

**TYPE-I**

1. (2) Using Rule 1,  
Mean

$$= \frac{3+11+9+7+15+13+8+19+17+21+14+x}{12}$$

According to question,

$$\frac{137+x}{12} = 12$$

$$\therefore 137+x = 144$$

$$\therefore x = 144 - 137 = 7$$

2. (3) Sum of total number of 8 students in exam  
 $= 8 \times 51 = 408$

Sum of total number of 9 students in exam  
 $= 9 \times 68 = 612$

$\therefore$  Required average

$$= \frac{408+612}{17} = \frac{1020}{17} = 60$$

**Aliter :** Using Rule 10,

Here,  $n_1 = 8$ ,  $a_1 = 51$

$n_2 = 9$ ,  $a_2 = 68$

$$\therefore \text{Average} = \frac{n_1 a_1 + n_2 a_2}{n_1 + n_2}$$

$$= \frac{8 \times 51 + 9 \times 68}{8+9}$$

$$= \frac{408+612}{17} = \frac{1020}{17}$$

$= 60$  marks.

3. (1) Using Rule 10,  
The required average marks

$$= \frac{55 \times 50 + 60 \times 55 + 45 \times 60}{55+60+45}$$

$$= \frac{2750 + 3300 + 2700}{160}$$

$$= \frac{8750}{160} = 54.68$$

4. (1) Using Rule 10,  
Required average

$$= \frac{20 \times 30 + 20 \times 30}{30+20}$$

$$= \frac{600+600}{50} = \frac{1200}{50} = 24$$

5. (4) Using Rule 10,  
Required average weight

$$\frac{(50 \times 6 + 51 \times 2 + 55 \times 2)}{10}$$

$$= \frac{300+102+110}{10} = \frac{512}{10}$$

$$= 51.2 \text{ kg.}$$

6. (4) If each number is multiplied by a certain number, then the average is also multiplied by that number.

$$\therefore \text{Required average} = 7 \times 12 = 84$$

7. (3) Using Rule 2,

Average income of whole group

$$= \frac{4200 \times 40 + 4000 \times 35}{75}$$

$$= \frac{168000 + 140000}{75}$$

$$= \frac{308000}{75} = ₹ 4106 \frac{2}{3}$$

8. (2) Weight of the boat

$$= 6 \times 52 - 5 \times 38$$

$$= 312 - 190 = 122 \text{ kg}$$

9. (2) Required average

$$= \frac{32 \times 60 + 33 \times 40}{72}$$

$$= \frac{1920+1320}{72} = \frac{3240}{72} = 45$$

10. (3) Using Rule 1,

Number of workers in the facto-

$$\text{ry} = \frac{1534}{118} = 13$$

11. (4) Total cost price of 20kg of mixed rice

$$₹ (12 \times 30 + 8 \times 40)$$

$$= ₹ 680$$

$\therefore$  Average per kg price

$$= \frac{680}{20} = ₹ 34$$

**Aliter :** Using Rule 2,

$$x_1 = 12, A_1 = 30$$

$$x_2 = 8, A_2 = 40$$

$$\therefore \text{Average} = \frac{A_1 x_1 + A_2 x_2}{x_1 + x_2}$$

$$= \frac{30 \times 12 + 40 \times 8}{12+8}$$

$$= \frac{360+320}{20}$$

$$= \frac{680}{20} = \text{Rs. } 34$$

12. (2) Using Rule 2,  
Required average

$$\frac{x_1 + x_2 + \dots + x_{20}}{20} = \frac{101 \times 20}{20}$$

$$= y - 101$$

13. (2) Sum of  $x$  numbers =  $xy$

Sum of  $y$  numbers =  $xy$

$\therefore$  Required average

$$= \frac{xy + xy}{x + y} = \frac{2xy}{x + y}$$

**Aliter :** Using Rule 10,

Here,  $n_1 = x$ ,  $a_1 = y$

$n_2 = y$ ,  $a_2 = x$

$$\therefore \text{Average} = \frac{n_1 a_1 + n_2 a_2}{n_1 + n_2}$$

$$= \frac{xy + yx}{x + y} = \frac{2xy}{x + y}$$

14. (2) Total sum of  $x$  numbers =  $xy^2$

Total sum of  $y$  numbers =  $yx^2$

$\therefore$  Required average

$$= \frac{xy^2 + yx^2}{x + y}$$

$$= \frac{xy(y + x)}{x + y} = xy$$

**Aliter :** Using Rule 10,

Here,  $n_1 = x$ ,  $a_1 = y^2$

$n_2 = y$ ,  $a_2 = x^2$

$$\therefore \text{Average} = \frac{n_1 a_1 + n_2 a_2}{n_1 + n_2}$$

$$= \frac{xy^2 + yx^2}{x + y}$$

$$= xy \left( \frac{x+y}{x+y} \right) = xy$$

15. (2) Using Rule 1,

$$\frac{x_1 + x_2 + \dots + x_n}{n} = \bar{x}$$

$$\therefore \sum_{i=1}^n (x_i - \bar{x})$$

$$= (x_1 - \bar{x}) + (x_2 - \bar{x}) + \dots + (x_n - \bar{x})$$

$$= (x_1 + x_2 + \dots + x_n) - n \cdot \bar{x}$$

$$= n \cdot \left( \frac{x_1 + x_2 + \dots + x_n}{n} \right) - n \cdot \bar{x}$$

$$= n\bar{x} - n\bar{x} = 0$$



**AVERAGE**

16. (2) Using Rule 2,  
 Required average price  

$$= \frac{13 \times 70 + 15 \times 60 + 12 \times 65}{13 + 15 + 12}$$

$$= \frac{910 + 900 + 780}{40} = \frac{2590}{40}$$

$$= ₹ 64.75$$

17. (1) That month will have 5 sun-  
 days.  
 $\therefore$  Required average  

$$= \frac{5 \times 510 + 25 \times 240}{30}$$

$$= \frac{2550 + 6000}{30}$$

$$= \frac{8550}{30} = 285$$

**Aliter :** Using Rule 10,  
 Here,  $n_1 = 5$ ,  $a_1 = 510$   
 $n_2 = 25$ ,  $a_2 = 240$

18. (1) Average of all numbers  

$$= \frac{30 \times 40 + 40 \times 30}{70}$$

$$= \frac{240}{7} = 34 \frac{2}{7}$$

**Aliter :** Using Rule 10,  
 Here,  $n_1 = 30$ ,  $a_1 = 40$   
 $n_2 = 40$ ,  $a_2 = 30$

$$\therefore \text{Average} = \frac{n_1 a_1 + n_2 a_2}{n_1 + n_2}$$

19. (1) If the average of remaining  
 numbers be  $x$ , then  
 $20 \times 15 = 5 \times 12 + 15x$   
 $\Rightarrow 300 = 60 + 15x$   
 $\Rightarrow 15x = 300 - 60 = 240$   
 $\Rightarrow x = \frac{240}{15} = 16$

**Aliter :** Using Rule 13,  
 Here,  $m = 20$ ,  $x = 15$   
 $n = 5$ ,  $y = 12$   
 Average of remaining

$$\text{Numbers} = \left( \frac{mx - ny}{m - n} \right)$$

$$= \left( \frac{20 \times 15 - 5 \times 12}{20 - 5} \right)$$

$$= \left( \frac{300 - 60}{15} \right) = \frac{240}{15} = 16$$

20. (3) Using Rule 1,  
 Total expenditure of the year  
 $= ₹ (3 \times 2200 + 4 \times 2550 + 5 \times 3120)$   
 $= ₹ (6600 + 10200 + 15600)$   
 $= ₹ 32400$   
 $\therefore$  Total income of the year  
 $= ₹ (32400 + 1260)$   
 $= ₹ 33660$   
 $\therefore$  Average monthly income  
 $= ₹ \frac{33660}{12} = ₹ 2805$

21. (1) Using Rule 1,  
 Required average  

$$= \frac{1.11 + 0.01 + 0.101 + 0.001 + 0.11}{5}$$

$$= \frac{1.332}{5} = 0.2664$$

22. (1) Total expenditure  
 $= 120 \times 7 = ₹ 840$   
 Total expenditure of 4 boys  
 $= 150 \times 4$   
 $= ₹ 600$   
 Total expenditure of 3 girls  
 $= 840 - 600 = ₹ 240$   
 $\therefore$  Their average expenditure  
 $= \frac{240}{3} = ₹ 80$

23. (2) Average cost of a chair  
 $= ₹ x$ , then  
 $x \times 12 + 6 \times 750 = 7800$   
 $\Rightarrow 12x = 7800 - 4500 = 3300$   
 $\Rightarrow x = \frac{3300}{12} = ₹ 275$

24. (1) Using Rule 2,  
 Average height  

$$= \frac{6 \times 1.15 + 8 \times 1.1 + 6 \times 1.12}{20}$$

$$= \frac{6.9 + 8.8 + 6.72}{20} = \frac{22.42}{20}$$

$$= 1 \text{ metre } 12.1 \text{ cm}$$

25. (2) Required average weight  

$$= \frac{42 \times 25 + 28 \times 40}{42 + 28}$$

$$= \frac{1050 + 1120}{70} = \frac{2170}{70} = 31 \text{ kg}$$

**Aliter :** Using Rule 10,  
 Here,  $n_1 = 42$ ,  $a_1 = 25$   
 $n_2 = 28$ ,  $a_2 = 40$

$$\text{Average} = \frac{n_1 a_1 + n_2 a_2}{n_1 + n_2}$$

26. (3) Male employees  $= x$   
 Female employees  $= y$   
 $\therefore (x + y) 12000 = x \times 15000 + y \times 8000$   
 $\Rightarrow (x + y) \times 12 = 15x + 8y$   
 $\Rightarrow 12x + 12y = 15x + 8y$   
 $\Rightarrow 3x = 4y$   
 $\Rightarrow \frac{x}{y} = \frac{4}{3} \Rightarrow x : y = 4 : 3$

27. (3) Mean of Ten observations -  
 Mean of nine observations  
 Tenth observation  
 $= 10 \times 17 - 9 \times 16$   
 $= 170 - 144 = 26$   
**Aliter :** Using Rule 19,  
 Here,  $N = 9$ ,  $T = 16$   
 $n = 1$ ,  $t = 1$   
 10th observation

$$= T + \left( \frac{N}{n} + 1 \right) t$$

$$= 16 + \left( \frac{9}{1} + 1 \right) \times 1$$

$$= 16 + 10 = 26$$

28. (4) If each item is multiplied by  
 8, their average gets multiplied  
 by 8.  
 $\therefore$  Required average  
 $= 8 \times 27 = 216$

29. (2) Sum of 4 new numbers  
 $= 50 \times 104 - 100 \times 44$   
 $= 5200 - 4400 = 800$

$$\therefore \text{Average} = \frac{800}{4} = 200$$

**Aliter :** Using Rule 19,  
 Here,  $N = 100$ ,  $T = 44$   
 $n = 4$ ,  $y = 50 - 44 = 6$

$\therefore$  Average of new numbers

$$= T + \left( \frac{N}{n} + 1 \right)$$

$$= 44 + \left( \frac{100}{4} + 1 \right) \times 6$$

$$= 44 + 26 \times 6$$

$$= 44 + 156 = 200$$

30. (4) Let the last number be  $x$ .  
 According to the question,  
 $18 \times 10 + 11 \times 20 + x$   
 $= 30 \times 15$   
 $\Rightarrow 180 + 220 + x = 450$   
 $\Rightarrow 400 + x = 450$   
 $\Rightarrow x = 450 - 400 = 50$





**AVERAGE**

- 31. (2)** Using Rule 2,

Required mean

$$\frac{1 \times 1 + 2 \times 2 + 3 \times 3 + 4 \times 4 + 5 \times 5 + 6 \times 6 + 7 \times 7}{1 + 2 + 3 + 4 + 5 + 6 + 7}$$

$$= \frac{1 + 4 + 9 + 16 + 25 + 36 + 49}{28}$$

$$= \frac{140}{28} = 5$$

- 32. (1)** Using Rule 1,

Numbers are : 10, 15, 20, 25, 30, 35, 40, 45  
 Sum = 220

$$\text{Average} = \frac{220}{8} = 27.5$$

- 33. (3)** Number of students in section

A = x

∴ Number of students in sections B and C

$$= (100 - x)$$

$$\therefore x \times 70 + (100 - x) \times 87.5$$

$$= 84 \times 100$$

$$\Rightarrow 70x + 87.5 \times 100 - 87.5x$$

$$= 8400$$

$$\Rightarrow 8750 - 17.5x = 8400$$

$$\Rightarrow 17.5x = 8750 - 8400 = 350$$

$$\Rightarrow x = \frac{350}{17.5} = 20$$

- 34. (3)** Weight of 12th person

= x kg (let).

∴ Average weight of 12 persons

$$= \left( \frac{11 \times 95 + x}{12} \right) \text{ kg}$$

According to the question,

$$\frac{11 \times 95 + x}{12} + 33 = x$$

$$\Rightarrow 1045 + x + 396 = 12x$$

$$\Rightarrow 1441 = 11x$$

$$\Rightarrow x = \frac{1441}{11} = 131 \text{ kg.}$$

- 35. (3)** Weight of B = (A + B)'s weight + (B + C)'s weight - (A + B + C)'s weight

$$= 40 \times 2 + 43 \times 2 - 45 \times 3$$

$$= 80 + 86 - 135$$

$$= 166 - 135 = 31 \text{ kg.}$$

- 36. (4)** Number of natural numbers = x

∴ Their sum = 15x

According to the question,

$$15x + 30 - 5 = x \times 17.5$$

$$\Rightarrow 17.5x - 15x = 25$$

$$\Rightarrow 2.5x = 25$$

$$\Rightarrow x = \frac{25}{2.5} = 10$$

- 37. (3)** D's weight =  $80 \times 4 - 84 \times 3$

$$= 320 - 252 = 68 \text{ kg.}$$

$$\text{E's weight} = 68 + 3 = 71 \text{ kg.}$$

$$\text{Total weight of (A + B + C + D + E)}$$

$$= 84 \times 3 + 68 + 71$$

$$= 252 + 68 + 71 = 391 \text{ kg.}$$

$$\text{Total weight of (B + C + D + E)}$$

$$= 79 \times 4 = 316 \text{ kg.}$$

$$\therefore \text{A's weight} = 391 - 316 = 75 \text{ kg.}$$

- 38. (3)** Using Rule 18,

$$\text{Here, } N = 15, T = 42, t = 1.6$$

Weight of new oarsman

$$= (42 + 15 \times 1.6) \text{ kg.}$$

$$= (42 + 24) \text{ kg.} = 66 \text{ kg.}$$

- 39. (2)** Let the average cost of each

book bought (of 64 books) be ₹x.

According to the question,

$$64 \times x - 50(x + 1) = 76$$

$$\Rightarrow 64x - 50x - 50 = 76$$

$$\Rightarrow 14x = 76 + 50 = 126$$

$$\Rightarrow x = \frac{126}{14} = 9$$

∴ Required average price

$$= 9 + 1 = ₹ 10$$

- 40. (2)** Sum of first n odd natural numbers =  $n^2$

$$\therefore \text{Their average} = \frac{n^2}{n} = n$$

∴ Required average = 25

because n = 25

**Aliter :** Using Rule 7,

$$\text{Average} = 25$$

- 41. (1)** Total height of 5 friends

$$= (6 \times 167 - 162) \text{ cm.}$$

$$= (1002 - 162) \text{ cm.}$$

$$= 840 \text{ cm.}$$

$$\therefore \text{Required average} = \frac{840}{5}$$

$$= 168 \text{ cm.}$$

- 42. (2)** Weight of new person

$$= (65 + 8 \times 2.5) \text{ kg}$$

$$= (65 + 20) \text{ kg}$$

$$= 85 \text{ kg}$$

**Aliter :** Using Rule 23,

$$\text{Here, } x = 2.5, n = 8$$

Weight of new person

$$= \text{weight of replaced boy} + x \times n$$

- 43. (1)** Using Rule 10,

Students in class A  $\Rightarrow x$

Students in class B  $\Rightarrow y$

Students in class C  $\Rightarrow z$

For classes A and B,

$$\frac{83x + 76y}{x + y} = 79$$

$$\Rightarrow 83x + 76y = 79x + 79y$$

$$\Rightarrow 83x - 79x = 79y - 76y$$

$$\Rightarrow 4x = 3y$$

For classes B and C

$$\frac{76y + 85z}{y + z} = 81$$

$$\Rightarrow 76y + 85z = 81y + 81z$$

$$\Rightarrow 5y = 4z$$

$$\therefore 20x = 15y = 12z$$

$$\Rightarrow \frac{20x}{60} = \frac{15y}{60} = \frac{12z}{60}$$

$$\Rightarrow \frac{x}{3} = \frac{y}{4} = \frac{z}{5}$$

∴ Required average

$$= \frac{83 \times 3 + 76 \times 4 + 85 \times 5}{3 + 4 + 5}$$

$$= \frac{249 + 304 + 425}{12} = \frac{978}{12}$$

$$= 81.5$$

- 44. (4)** Temperature on 4th day

$$= (4 \times 25 + 4 \times 25.5 - 25.2 \times 7)^\circ\text{C}$$

$$= (100 + 102 - 176.4)^\circ\text{C}$$

$$= 25.6^\circ\text{C}$$

- 45. (4)** Number of students in the class = x (let)

∴ Number of girls = 50 - x

According to the question,

$$x \times 70 + (50 - x) \times 75$$

$$= 50 \times 72$$

$$\Rightarrow 70x + 3750 - 75x = 3600$$

$$\Rightarrow 3750 - 5x = 3600$$

$$\Rightarrow 5x = 3750 - 3600 = 150$$

$$\Rightarrow x = \frac{150}{5} = 30$$

- 46. (2)** Let average marks of remaining 30 students be x.

$$\therefore 65 = \frac{30 \times 85 + 30 \times x}{60}$$

$$\Rightarrow 65 \times 60 = 2550 + 30x$$

$$\Rightarrow 3900 = 2550 + 30x$$

$$\Rightarrow 30x = 3900 - 2550 = 1350$$

$$\Rightarrow x = \frac{1350}{30} = 45.$$



**AVERAGE**

47. (3) Number of successful students in the exam =  $x$   
 $\therefore$  Number of unsuccessful students =  $100 - x$   
 According to the question,

$$30 = \frac{35x + 10(100 - x)}{100}$$

$$\Rightarrow 3000 = 35x + 1000 - 10x$$

$$\Rightarrow 3000 = 25x + 1000$$

$$\Rightarrow 25x = 3000 - 1000 = 2000$$

$$\Rightarrow x = \frac{2000}{25} = 80$$

48. (1) B's weight = (A + B)'s weight + (B + C)'s weight - (A + B + C)'s weight  
 $= (40 \times 2 + 2 \times 43 - 45 \times 3)$  kg.  
 $= (80 + 86 - 135)$  kg.  
 $= 31$  kg.

49. (3) Value of 13th result  
 $= 25 \times 20 - 12 \times 15 - 12 \times 18$   
 $= 500 - 180 - 216 = 104$

50. (2) Difference  
 $= 83 - 53 = 30$   
 Incorrect observation > Correct observation  
 $\therefore$  Required average

$$= 35 - \frac{30}{100} = 35 - 0.3 = 34.7$$

51. (1) According to the question,

$$\frac{x+y}{2} - \frac{y+z}{z} = 12$$

$$\Rightarrow \frac{x-z}{2} = 12$$

$$\Rightarrow x - z = 2 \times 12 = 24$$

52. (4) Average of 7 consecutive odd integers = 37  
 $\therefore$  Fourth odd number = 37  
 $\therefore$  First odd number = 31  
 13th odd number =  $31 + 24 = 55$   
 $\therefore$  Required average

$$= \frac{31+55}{2} = \frac{86}{2} = 43$$

53. (2) Total correct marks of 35 children =  $35 \times 35 + 35 - 65$   
 $= 1225 - 30 = 1195$

$$\text{Required average} = \frac{1195}{35} = 34.14$$

**OR**

$$\text{Difference} = -65 + 35 = -30$$

$$\text{Required average} = 35 - \frac{30}{35}$$

$$= 35 - 0.857 = 34.143$$

54. (2) Average height of whole class

$$= \left( \frac{30 \times 160 + 20 \times 165}{50} \right) \text{ cm}$$

$$= \left( \frac{4800 + 3300}{50} \right) \text{ cm}$$

$$= \left( \frac{8100}{50} \right) \text{ cm} = 162 \text{ cm}$$

55. (3) Total correct marks of 17 students  
 $= 17 \times 71 - 65 - 24 + 56 + 50$   
 $= 1207 - 89 + 106 = 1224$   
 $\therefore$  Required correct average

$$= \frac{1224}{17} = 72$$

56. (3) If each number of a set be multiplied by  $x$ , the average gets multiplied by  $x$ .  
 If each number of a set be increased by  $y$ , the average gets increased by  $y$ .

$$\therefore \text{Required average} = 2 \times 9 + 3 = 21$$

57. (3) Correct sum of 20 numbers  
 $= 20 \times 35 - 45 + 85$   
 $= 700 + 40 = 740$   
 $\therefore$  Required average

$$= \frac{740}{20} = 37$$

58. (4) According to the question,  
 $a + b + c = 3 \times 20 = 60$  ... (i)  
 $b + c + d = 3 \times 25 = 75$  ... (ii)  
 By equation (i) - (ii),  
 $a - d = 60 - 75$   
 $\Rightarrow a - 30 = -15$   
 $\Rightarrow a = 30 - 15 = 15$

59. (4) Let the total number of students in the class be  $x$ .  
 According to the question,  
 $ax = 10 \times b + (x - 10)c$   
 $\Rightarrow ax = 10b + xc - 10c$   
 $\Rightarrow ax - cx = 10b - 10c$   
 $\Rightarrow x(a - c) = 10(b - c)$   
 $\Rightarrow x = \frac{10(b - c)}{a - c}$

60. (1) Average contribution of 9 students of the class

$$= \text{Rs. } x \text{ (let).}$$

$$\text{According to the question,}$$

$$\frac{7 \times 50 + x + 50 + x + 90}{9} = x$$

$$\Rightarrow 350 + 2x + 140 = 9x$$

$$\Rightarrow 9x - 2x = 490$$

$$\Rightarrow 7x = 490$$

$$\Rightarrow x = \frac{490}{7} = \text{Rs. } 70$$

61. (1) Monday + Tuesday + Wednesday + Thursday  
 $= 4 \times 48^\circ = 192^\circ$  ..... (i)  
 Tuesday + Wednesday + Thurs-

$$\text{day} + \text{Friday} = 4 \times 52^\circ = 208^\circ \quad \dots (ii)$$

$$\text{By equation (ii) - (i),}$$

$$\text{Friday} - \text{Monday} = 208^\circ - 192^\circ = 16$$

$$\Rightarrow \text{Friday} = 16 + 42 = 58^\circ$$

62. (4) According to the question,  
 $7 + 5 + 13 + x + 9 = 10 \times 5$   
 $\Rightarrow 34 + x = 50$   
 $\Rightarrow x = 50 - 34 = 16$

63. (2) Revenue of fourth year  
 $= \text{Rs. } (4 \times 82 + 4 \times 70 - 7 \times 75)$  lakhs  
 $= \text{Rs. } (328 + 280 - 525)$  lakhs  
 $= \text{Rs. } 83$  lakhs

64. (4) Marks in Maths  
 $= 50 \times 4 + 70 \times 4 - 58 \times 7$   
 $= 200 + 280 - 406$   
 $= 480 - 406 = 74$

65. (2) Prime numbers between 1 and 20

$$\Rightarrow 2, 3, 5, 7, 11, 13, 17, 19$$

$$\text{Sum} = 2 + 3 + 5 + 7 + 11 + 13 + 17 + 19 = 77$$

$$\therefore \text{Required average}$$

$$= \frac{77}{8} = 9\frac{5}{8}$$

**TYPE-II**

1. (3) Using Rule 1,  
 According to question,  
 The average of 9 numbers = 30  
 Now, The total of 9 numbers  
 $= 30 \times 9 = 270$   
 The average of first 5 numbers  
 $= 25$

$$\therefore \text{The total of first 5 numbers} = 25 \times 5 = 125$$

$$\text{and Total of last 3 numbers} = 3 \times 35 = 105$$

$$\text{Hence, required answer} = 270 - (125 + 105)$$

$$= 270 - 230 = 40$$

2. (3) Using Rule 1,  
 The middle number  
 $= 8 \times 6.5 + 8 \times 9.5 - 15 \times 7$   
 $= 52 + 76 - 105$   
 $= 128 - 105 = 23$

3. (3) Using Rule 1,  
 Sum of 8 numbers  
 $= 20 \times 8 = 160$   
 Sum of the first two numbers

$$= \frac{31}{2} \times 2 = 31$$

$$\text{Sum of next three numbers}$$

$$= \frac{64}{3} \times 3 = 64$$

$$\text{Sum of the remaining three numbers} = 160 - (31 + 64) = 160 -$$



**AVERAGE**

- 95 = 65  
 Let 6th number =  $x$   
 $\therefore$  7th number =  $x + 4$ ,  
 8th number =  $x + 7$   
 $\Rightarrow x + x + 4 + x + 7 = 65$   
 $\Rightarrow 3x = 65 - 11$   
 $\Rightarrow x = \frac{54}{3} = 18$   
 $\therefore$  Eighth number  
 =  $18 + 7 = 25$
4. (2) Using Rule 1,  
 Last number = Sum of 20 numbers - sum of first 12 numbers - sum of next 7 numbers  
 =  $20 \times 12 - 11 \times 12 - 7 \times 10$   
 =  $240 - 132 - 70 = 38$
5. (4) Using Rule 1,  
 Fourth number  
 =  $(4 \times 4 + 4 \times 4 - 3 \times 7)$   
 =  $(16 + 16 - 21) = 11$
6. (3) Using Rule 1,  
 $M + T + W + TH = 4 \times 37$   
 =  $148^\circ\text{C}$  ..... (i)  
 $TH + F + S + S = 4 \times 41$   
 =  $164^\circ\text{C}$  ..... (ii)  
 $M + T + \dots + S + S = 7 \times 39$   
 =  $273^\circ\text{C}$  ..... (iii)  
 $\therefore$  The temperature of the fourth day  
 =  $148 + 164 - 273 = 39^\circ\text{C}$
7. (2) Using Rule 1,  
 Person's income in the eighth month  
 = ₹  $(3160 \times 8 + 5 \times 4120 - 12 \times 3400)$   
 = ₹  $(25280 + 20600 - 40800)$   
 = ₹ 5080
8. (4) Using Rule 1,  
 Last number  
 =  $30 \times 12 - 20 \times 11 - 9 \times 10$   
 =  $360 - 220 - 90$   
 =  $360 - 310 = 50$
9. (4) Using Rule 1,  
 Sixth result =  $6 \times 49 + 6 \times 52 - 11 \times 50$   
 =  $294 + 312 - 550 = 56$
10. (2) Using Rule 1,  
 $x + x + 1 + x + 2 + x + 3 + x + 4 + x + 5 + x + 6 + x + 7$   
 =  $6.5 \times 8 = 52$   
 $\Rightarrow 8x + 28 = 52$   
 $\Rightarrow 8x = 52 - 28 = 24$   
 $\Rightarrow x = 3$   
 $\therefore$  Required average =  $\frac{3 + 10}{2}$   
 = 6.5
11. (2) Using Rule 1,  
 According to the question,  
 $195 + x + x + 20 = 135 \times 3$   
 $\Rightarrow 2x + 215 = 405$   
 $\Rightarrow 2x = 405 - 215 = 190$   
 $\therefore x = \frac{190}{2} = 95$   
 $x =$  Smallest number

12. (4) Using Rule 1,  
 $a + b + c = 18 \times 3 = 54$   
 and,  $b + c + d = 16 \times 3 = 48$   
 $\therefore a + b + c - b - c - d$   
 $\Rightarrow 54 - 48 = 6$   
 $\Rightarrow a - d = 6$   
 $\Rightarrow a - 19 = 6$   
 $\Rightarrow a = 19 + 6 = 25$
13. (2) Using Rule 1,  
 Sixth number  
 =  $6 \times 32 + 6 \times 37 - 11 \times 35$   
 =  $192 + 222 - 385 = 29$
14. (3) Using Rule 1,  
 $a + b + c = 45$  and  
 $b + c + d = 48$   
 $\Rightarrow b + c = 48 - 19 = 29$   
 $\therefore a + b + c = 45$   
 $\Rightarrow a = 45 - 29 = 16$
15. (3) Using Rule 1,  
 The sixth number  
 =  $9 \times 50 - 5 \times 54 - 3 \times 52$   
 =  $450 - 270 - 156 = 24$
16. (1) Using Rule 1,  
 Sixth number =  $6 \times 60 + 6 \times 65 - 11 \times 63$   
 =  $360 + 390 - 693 = 57$
17. (3) Using Rule 1,  
 Numbers in order  
 $\Rightarrow a, b$  and  $c$   
 $\therefore a + b = 2 \times 2 = 4$   
 $b + c = 2 \times 3 = 6$   
 $c + a = 2 \times 4 = 8$   
 On adding,  
 $2(a + b + c) = 4 + 6 + 8 = 18$   
 $\Rightarrow a + b + c = \frac{18}{2} = 9$   
 $\therefore$  Required average =  $\frac{9}{3} = 3$
18. (1) Largest 3-digit number  
 formed by 0, 2 and 4 = 420  
 Smallest number of three digits  
 = 204  
 $\therefore$  Required average  
 =  $\frac{420 + 204}{2} = \frac{624}{2} = 312$
19. (1) Using Rule 1,  
 Sum of remaining two numbers  
 =  $6 \times 3.95 - 2 \times 3.4 - 2 \times 3.85$   
 =  $23.7 - 6.8 - 7.7 = 9.2$   
 $\therefore$  Required average =  $\frac{9.2}{2} = 4.6$

20. (1) Let three numbers be  $a, b$  and  $c$  respectively.  
 $\therefore a + b + c = 16 \times 3 = 48$  ---(i)  
 $b + c + 20 = 15 \times 3 = 45$   
 $\Rightarrow b + c = 45 - 20 = 25$  ---(ii)  
 By equation (i) - (ii),  
 $a = 48 - 25 = 23$   
**Aliter :** Using Rule 16,  
 Here,  $n = 3, F = 16, L = 15$   
 $l = 20, f = ?$   
 $f - l = n(F - L)$   
 $f - 20 = 3(16 - 15)$   
 $f = 3 + 20$   
 $f = 23$
21. (2) Sum of new numbers  
 =  $na + (2 + 4 + 8 + 16 \dots \text{to } n \text{ terms})$   
 Now,  $S = 2 + 4 + 8 + 16 + \dots$   
 to  $n$  terms  
 Here,  $a =$  first term = 2  
 $r =$  common ratio =  $\frac{4}{2} = 2$   
 It is a geometric series.  
 $\therefore S = \frac{a(r^n - 1)}{r - 1} = \frac{2(2^n - 1)}{2 - 1}$   
 =  $2(2^n - 1)$   
 $\therefore$  Required average  
 =  $\frac{na + 2(2^n - 1)}{n}$   
 =  $a + \frac{2(2^n - 1)}{n}$
22. (2) Sum of remaining 10 numbers  
 =  $12 \times 15 - 2 \times 14$   
 =  $180 - 28 = 152$   
 $\therefore$  Required average =  $\frac{152}{10}$   
 =  $\frac{76}{5} = 15\frac{1}{5}$
23. (4) When each number is multiplied by 8, the new average gets multiplied by 8. i.e.,  
 $21 \times 8 = 168$
24. (2) Seventh observation  
 =  $65 \times 7 + 7 \times 75 - 13 \times 70$   
 =  $455 + 525 - 910$   
 =  $980 - 910 = 70$   
**Aliter :**  
 Here,  $n = 13, x = 70$   
 $m = 7, y = 65$   
 $m = 7, z = 75$   
 Seventh result =  $m(y + z) - nx$   
 =  $7(65 + 75) - 13 \times 70$   
 =  $7 \times (140) - 910$   
 =  $980 - 910 = 70$





**AVERAGE**

25. (3) Average of five numbers

$$\begin{aligned} &= \frac{2 \times 8 + 3 \times 3}{2 + 3} \\ &= \frac{16 + 9}{5} = \frac{25}{5} = 5 \end{aligned}$$

26. (4) Middle i.e. eighth number  
 $= 8 \times 6.5 + 8 \times 8.5 - 15 \times 7$   
 $= 52 + 68 - 105 = 120 - 105$   
 $= 15$

**TYPE-III**

1. (2) Average of 7 consecutive numbers is 20.

Since the numbers are consecutive, they form an arithmetic series with common difference 1. Since, 7 is odd, 20 must be the middle number.

We can write the series as below,  
 17, 18, 19, 20, 21, 22, 23  
 $\therefore$  The largest of these numbers is 23.

2. (4) Using Rule 1,  
 The required average

$$\begin{aligned} &= \frac{2 + 3 + 5 + 7 + 11 + 13 + 17 + 19 + 23}{9} \\ &= \frac{100}{9} = 11\frac{1}{9} \end{aligned}$$

3. (4) Using Rule 1,  
 The average will increase by 1.5.

$$\begin{aligned} \text{As, } \frac{1 + 2 + 3 + 4 + 5}{5} &= 3, \\ \frac{1 + 2 + 3 + 4 + 5 + 6 + 7 + 8}{8} &= 4.5 \\ \therefore 4.5 - 3 &= 1.5 \end{aligned}$$

4. (3) Using Rule 3,

**Tricky approach**

$$\begin{aligned} 1 + 2 + 3 + \dots + n &= \frac{n(n+1)}{2} \\ \text{Average of these numbers} &= \frac{n+1}{2} \\ \therefore \text{Required average} &= \frac{100+1}{2} = 50.5 \end{aligned}$$

5. (2) **Tricky Approach**

Average of the first  $n$  natural odd numbers =  $\frac{n}{2}$   
 Number of odd numbers upto

$$\frac{100}{2} = 50 = \text{required average}$$

**Aliter :** Using Rule 7,

Odd numbers are

1, 3, 5, ..... , 99

Total odd numbers are = 50

$\therefore$  Average = 50

6. (4) Using Rule 4,

$$\begin{aligned} &\frac{1^2 + 2^2 + 3^2 + \dots + n^2}{n} \\ &= \frac{(n+1)(2n+1)}{6} \\ \therefore \frac{1^2 + 2^2 + 3^2 + \dots + 10^2}{10} \\ &= \frac{(10+1)(2 \times 10 + 1)}{6} \end{aligned}$$

$$= \frac{11 \times 21}{6} = 38.5$$

7. (4) Using Rule 1,  
 Required average

$$\begin{aligned} &= \frac{0 + 1 + 2 + 3 + \dots + 9}{10} \\ &= \frac{9 \times (9+1)}{2 \times 10} = 4.5 \end{aligned}$$

8. (3) If the smallest number be  $x$ , then

$$\begin{aligned} \frac{x}{3} + 12 &= x + 2 \\ \Rightarrow x + 36 &= 3x + 6 \\ \Rightarrow 3x - x &= 36 - 6 \\ \Rightarrow 2x &= 30 \Rightarrow x = 15 \\ \therefore \text{Third number} &= 15 + 4 = 19 \end{aligned}$$

9. (4)  $x + x + 2 + x + 4 + x + 6 + x + 8 + x + 10 + x + 12 + x + 14 + x + 16$   
 $= 9 \times 53$   
 $\Rightarrow 9x + 72 = 477$   
 $\Rightarrow 9x = 477 - 72 = 405$

$$\Rightarrow x = \frac{405}{9} = 45$$

10. (3) Required average

$$\begin{aligned} &= \frac{3(1 + 2 + 3 + \dots + 9)}{9} \\ &= \frac{9 \times 10}{2 \times 3} = 15 \end{aligned}$$

**Aliter :** Using Rule 9,  
 Here,  $n = 9$ ,  $x = 3$

$$\begin{aligned} \text{Average} &= x \left( \frac{1+n}{2} \right) \\ &= 3 \left( \frac{1+9}{2} \right) = 15 \end{aligned}$$

11. (2) Using Rule 1,

$$\begin{aligned} x + x + 1 + x + 2 + x + 3 + x + 4 + x + 5 + x + 6 \\ &= 26 \times 7 \end{aligned}$$

$$\Rightarrow 7x + 21 = 182$$

$$\Rightarrow 7x = 182 - 21 = 161$$

$$\Rightarrow x = \frac{161}{7} = 23$$

**Quicker Approach**

Fourth number = 26

$\therefore$  First number = 23

12. (2) Average of  $a, b, c, d, e, f, g$   
 $= d$

Average of  $j, k, l, m, n, = l$

$$\therefore \text{Required average} = \frac{d+l}{2}$$

13. (2) Numbers =  $x, x + 2, \dots, x + 10$   
 Required difference

$$= x + 10 - x = 10$$

14. (1)  $m + m + 1 + m + 2 + m + 3 + m + 4 = 5n$

$$\Rightarrow 5m + 10 = 5n$$

$$\Rightarrow m + 2 = n \quad \dots(i)$$

Required average

$$\begin{aligned} &= \frac{m + 2 + m + 3 + m + 4 + m + 5 + m + 6 + m + 7}{6} \end{aligned}$$

$$= \frac{6m + 27}{6}$$

$$= \frac{2m + 9}{2} = \frac{2(n - 2) + 9}{2} = \frac{2n + 5}{2}$$

By (i)  $[m = n - 2]$

15. (4) Let the first number be  $x$ .

$$\therefore x + 3 + x + 4 = 2 \times 6$$

$$\Rightarrow 2x + 7 = 12$$

$$\Rightarrow 2x = 5 \Rightarrow x = \frac{5}{2}$$

$$\therefore x + (x + 1) + \dots + (x + 7) = 8x + 28$$

$$= 8 \times \frac{5}{2} + 28 = 20 + 28 = 48$$

16. (4)  $x + x + 2 + x + 4 + x + 6$   
 $= 15 \times 4$

$$\Rightarrow 4x + 12 = 60$$

$$\Rightarrow 4x = 60 - 12 = 48$$

$$\Rightarrow x = \frac{48}{4} = 12$$

Hence, the numbers are 12, 14, 16, 18

$\therefore$  The second highest number is 16.



**AVERAGE**

- 17.** (3) Using Rule 1,  
Average of first five odd multiples of 3

$$= \frac{3(1+3+5+7+9)}{5}$$

$$= \frac{3 \times 25}{5} = 15$$

- 18.** (4) Fifth number =  $n$   
Tenth number =  $n + 5$   
Eleventh number =  $n + 6$   
New average

$$= \frac{9n + n + 5 + n + 6}{11}$$

$$= \frac{11n + 11}{11} = \frac{(n+1) \times 11}{11} = n+1$$

- 19.** (1)  $x + x + 2 + x + 4 + x + 6 = 9 \times 4$   
 $\Rightarrow 4x + 12 = 36$   
 $\Rightarrow 4x = 36 - 12 = 24$

$$\therefore x = \frac{24}{4} = 6$$

$$\therefore \text{Largest number} = 6 + 6 = 12$$

- 20.** (4)  $b = a + 2$   
 $c = b + 2 = a + 4$   
 $d = c + 2 = a + 6$   
 $e = d + 2 = a + 8$   
 $\therefore$  Required average

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

$$= \frac{5a + 20}{5} = a + 4$$

- 21.** (2) Required average

$$= \frac{2+3+5+7+11}{5}$$

$$= \frac{28}{5} = 5.6$$

- 22.** (1) Required average

$$= \frac{7+21+35+49+63+77}{6}$$

$$= \frac{7(1+3+5+7+9+11)}{6}$$

$$= \frac{7 \times 36}{6} = 42$$

- 23.** (3) Required average

$$= \frac{2+3+5+7+11+13+17+19+23+29}{10}$$

$$= \frac{129}{10} = 12.9$$

- 24.** (1) Average of 8 consecutive even numbers = 93

$$\therefore \text{Fifth number} = 93 + 1 = 94$$

$$\therefore \text{Largest number} = 94 + 6 = 100$$

- 25.** (2)  $x + x + 1 + x + 2 + x + 3 + x + 4 + x + 5 = 6K$   
 $\Rightarrow 6x + 15 = 6K$

$$\Rightarrow x + \frac{15}{6} = K$$

$$\Rightarrow x + \frac{5}{2} = K \dots\dots (i)$$

Again,

$$\frac{x + (x+1) + \dots\dots\dots (x+6) + (x+7)}{8}$$

$$= \frac{8x}{8} + \frac{28}{8} = x + \frac{7}{2} \dots\dots\dots (ii)$$

$$\text{Now, } x + \frac{7}{2} - x - \frac{5}{2} = 1$$

- 26.** (2) Five consecutive integers are :  $x, x+1, x+2, x+3$  and  $x+4$   
 $\therefore$  Their average

$$= \frac{x + x+1 + x+2 + x+3 + x+4}{5}$$

$$= \frac{5x+10}{5} = x+2$$

New average

$$= \frac{(5x+10) + x+5 + x+6}{7}$$

$$= \frac{7x+21}{7} = x+3$$

$$\text{Difference} = x+3 - x-2 = 1$$

- 27.** (2) Required average

$$= \frac{3+5+7+9+11+13+15+17+19+21}{10}$$

$$= \frac{120}{10} = 12$$

- 28.** (2) Let three consecutive even numbers be  $x, x+2$  and  $x+4$ .  
According to the question,

$$(x + x + 2 + x + 4) - \frac{x + x + 2 + x + 4}{3}$$

$$= 28$$

$$\Rightarrow (3x+6) - \frac{3x+6}{3} = 28$$

$$\Rightarrow (3x+6) - (x+2) = 28$$

$$\Rightarrow 3x+6 - x-2 = 28$$

$$\Rightarrow 2x+4 = 28$$

$$\Rightarrow 2x = 28 - 4 = 24$$

$$\Rightarrow x = \frac{24}{2} = 12$$

- 29.** (2) Average of 7 consecutive numbers = 20

$$\therefore \text{Fourth number} = 20$$

$$\therefore \text{Largest number} = 20 + 3 = 23$$

- 30.** (1) Average of 25 consecutive odd numbers = 55

$$\therefore \text{Mid number i.e. 13th number} = 55$$

$$\therefore \text{25th number} = 55 + 2 \times 12$$

$$= 55 + 24 = 79$$

**TYPE-IV**

- 1.** (1)  $A + B = ₹ 28,000 \dots(i)$

$$B + C = ₹ 31,200 \dots(ii)$$

$$C + A = 28,800 \dots(iii)$$

Adding,

$$2(A + B + C) = 88000$$

$$\Rightarrow A + B + C = 44000$$

From equation (i),

$$28000 + C = 44000$$

$$\Rightarrow C = 44000 - 28000$$

$$= ₹ 16000$$

- 2.** (3)  $X + Y = ₹ (2 \times 5050)$

$$= ₹ 10100$$

$$Y + Z = ₹ (2 \times 6250)$$

$$= ₹ 12500$$

$$Z + X = ₹ (2 \times 5200)$$

$$= ₹ 10400$$

Adding all three,

$$2(X + Y + Z)$$

$$= ₹ (10100 + 12500 + 10400)$$

$$= ₹ 33000$$

$$\Rightarrow X + Y + Z = \text{Rs. } 16500$$

$$\therefore X = (X + Y + Z) - (Y + Z)$$

$$= ₹ (16500 - 12500)$$

$$= ₹ 4000$$

- 3.** (1) Total annual expenditure of man

$$= \text{Rs.}(5 \times 1200 + 7 \times 1300)$$

$$= \text{Rs. } (6000 + 9100)$$

$$= \text{Rs. } 15100$$

His total annual income

$$= \text{Rs. } (15100 + 2900)$$

$$= \text{Rs. } 18000$$

$$\therefore \text{Average monthly income}$$

$$= \frac{18000}{12} = \text{Rs. } 1500$$

- 4.** (2) Total daily income of A, B and C =  $3 \times 450 = ₹ 1350$

$$\text{Total daily income of A and B}$$

$$= 2 \times 400 = ₹ 800$$

$$\text{Total daily income of B and C}$$

$$= 2 \times 430 = ₹ 860$$

$$\therefore \text{B's daily income}$$

$$= ₹ (800 + 860 - 1350) = ₹ 310$$



**AVERAGE**

5. (4) Number of other workers except officers =  $x$   
 $\therefore 12 \times 400 + x \times 56 = (x + 12) \times 60$   
 $\Rightarrow 4800 + 56x = 60x + 720$   
 $\Rightarrow 60x - 56x = 4800 - 720$   
 $\Rightarrow 4x = 4080$

$$\Rightarrow x = \frac{4080}{4} = 1020$$

$\therefore$  Total number of workers =  $1020 + 12 = 1032$

6. (2) Total annual expenditure of the family = ₹  $(4 \times 2570 + 3 \times 2490 + 5 \times 3030)$

$$= ₹ (10280 + 7470 + 15150)$$

$$= ₹ 32900$$

Total income

$$= ₹ (32900 + 5320)$$

$$= ₹ 38220$$

$\therefore$  Required average monthly income =  $\frac{38220}{12} = ₹ 3185$

7. (3) Total expenditure of man in a year

$$= ₹ (4 \times 1800 + 8 \times 2000)$$

$$= ₹ (7200 + 16000)$$

$$= ₹ 23200$$

Total annual income

$$= (23200 + 5600)$$

$$= ₹ 28800$$

$\therefore$  Average monthly income

$$= \frac{28800}{12} = ₹ 2400$$

8. (2) Total monthly income of P and Q =  $2 \times 5050 = ₹ 10100$

Total monthly income of Q and R

$$= 2 \times 6250 = ₹ 12500$$

Total monthly income of P and R

$$= 2 \times 5200 = ₹ 10400$$

On adding all three,

Total monthly income of  $2(P + Q + R)$

$$= ₹ (10100 + 12500 + 10400)$$

$$= ₹ 33000$$

$\therefore$  Total monthly income of  $(P + Q + R) = \frac{33000}{2}$

$$= ₹ 16500$$

$\therefore$  P's monthly income = ₹  $(16500 - 12500)$

$$= ₹ 4000$$

9. (2) Total workers =  $x$  (let)

$$\therefore 7 \times 12000 + (x - 7) \times 6000 = 8000x$$

$$\Rightarrow 84000 + 6000x - 42000 = 8000x$$

$$\Rightarrow 8000x - 6000x = 42000$$

$$\Rightarrow 2000x = 42000$$

$$\Rightarrow x = \frac{42000}{2000} = 21$$

10. (4) Total income of A and B

$$= ₹. (2 \times 200) = ₹. 400$$

Total income of C and D

$$= ₹. (2 \times 250) = ₹. 500$$

$\therefore$  Required average

$$= \frac{400 + 500}{4} = \frac{900}{4} = ₹. 225$$

11. (3) Average daily salary :

Men  $\Rightarrow$  Rs.  $x$  (let).

Women  $\Rightarrow$  Rs.  $(x - 10)$

Boys  $\Rightarrow$  Rs.  $(x - 20)$

According to the question,

$$7x + 11(x - 10) + 2(x - 20)$$

$$= 20 \times 257.5$$

$$\Rightarrow 7x + 11x - 110 + 2x - 40$$

$$= 5150$$

$$\Rightarrow 20x - 150 = 5150$$

$$\Rightarrow 20x = 5150 + 150 = 5300$$

$$\Rightarrow x = \frac{5300}{20} = ₹. 265$$

12. (1) Total members in the group =  $x$

Non-senior members =  $x - 7$

According to the question,

$$16000x = 24000 \times 7 + (x - 7) \times 12000$$

$$\Rightarrow 16x = 24 \times 7 + (x - 7) \times 12$$

$$\Rightarrow 16x = 168 + 12x - 84$$

$$\Rightarrow 16x - 12x = 168 - 84$$

$$\Rightarrow 4x = 84$$

$$\Rightarrow x = \frac{84}{4} = 21$$

13. (2) Required average

$$= ₹. \left( \frac{16000 \times 19 + 20000}{20} \right)$$

$$= ₹. \left( \frac{304000 + 20000}{20} \right)$$

$$= ₹. \left( \frac{324000}{20} \right)$$

$$= ₹. 16200$$

**OR**

Difference = Rs.  $(20000 - 16000)$

$$= ₹. 4000$$

$$\therefore \text{Increase in average} = \frac{4000}{20}$$

$$= ₹. 200$$

$\therefore$  Required average

$$= ₹. (16000 + 200)$$

$$= ₹. 16200$$

14. (3) Total number of workers in the factory =  $x$  (let)

Number of technicians = 7

Remaining workers =  $x - 7$

According to the question,

$$\frac{7 \times 15000 + (x - 7) \times 9000}{x}$$

$$= 12000$$

$$\Rightarrow 7 \times 15 + 9x - 63 = 12x$$

$$\Rightarrow 105 - 63 = 12x - 9x$$

$$\Rightarrow 3x = 42$$

$$\Rightarrow x = \frac{42}{3} = 14$$

15. (2) Let the average monthly income of man be Rs.  $x$ .

$\therefore$  Man's annual income

$$= ₹. 12x$$

$\therefore$  Man's annual expenses

$$= ₹. \left( \frac{6x \times 12}{8} \right)$$

$$= ₹. 9x$$

$$\therefore \text{Savings} = 12x - 9x = ₹. 3x$$

$$\therefore 3x = 6000$$

$$\Rightarrow x = \frac{6000}{3} = ₹. 2000$$

**TYPE-V**

1. (2)  $x + y + z = 180$

$$x = \frac{1}{4}(y + z)$$

$$\Rightarrow 4x = y + z$$

$$\Rightarrow 5x = 180, \therefore x = 36$$

2. (2) Let third number be  $x$ .

$\therefore$  Second number =  $3x$

and first number =  $\frac{3x}{2}$

$$\text{Now, } x + 3x + \frac{3x}{2} = 3 \times 44$$

$$\Rightarrow \frac{8x + 3x}{2} = 3 \times 44$$

$$\Rightarrow 11x = 6 \times 44$$

$$\Rightarrow x = \frac{6 \times 44}{11} = 24$$

$\therefore$  The largest number

$$= 3x = 3 \times 24 = 72$$





**AVERAGE**

3. (3) Let the numbers be  $a, b, c$ ,

$$\frac{a+b+c}{3} = 3d$$

$$\Rightarrow a+b+c = 9d$$

$$\text{Again, } \frac{a+b+c+d}{4} = 5$$

$$\Rightarrow a+b+c+d = 20$$

$$\Rightarrow 9d+d = 20$$

$$\Rightarrow 10d = 20 \Rightarrow d = 2$$

4. (1) Let the third number be  $x$ .

$\therefore$  The second number =  $2x$   
 and the third number  
 =  $2 \times 2x = 4x$

According to the question,

$$\frac{4x+2x+x}{3} = 21$$

$$\Rightarrow 7x = 21 \times 3$$

$$\Rightarrow x = \frac{21 \times 3}{7} = 9$$

**Aliter :** Using Rule 15,

$$a = 2, b = 2, x = 21$$

$$\text{First number} = \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times 2}{1+2+4} \times 21$$

$$= \frac{12}{7} \times 21 = 36$$

$$\text{Second number} = \frac{3b}{1+a+ab} \times x$$

$$= \frac{3 \times 2}{7} \times 21 = 18$$

$$\text{Third number} = \frac{3}{1+a+ab} \times x$$

$$= \frac{3}{7} \times 21 = 9$$

5. (3) Let second number be  $x$

$\therefore$  The first number =  $3x$   
 and the third number =  $15x$   
 Now,  $x + 3x + 15x$

$$= 3 \times 57$$

$$\Rightarrow 19x = 3 \times 57$$

$$\Rightarrow x = \frac{3 \times 57}{19} = 9$$

$\therefore$  Required difference

$$= 15x - x = 14x$$

$$= 14 \times 9 = 126$$

**Aliter :** Using Rule 15,

$$a = 3, b = 5, x = 57$$

$$\text{First number} = \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 3 \times 5}{1+3+15} \times 57$$

$$= \frac{45}{19} \times 57 = 135$$

Second number

$$= \frac{3b}{1+b+ab} \times x$$

$$= \frac{3 \times 5}{19} \times 57$$

$$= \frac{15}{19} \times 57 = 45$$

$$\text{Third number} = \frac{3}{1+b+ab} \times x$$

$$= \frac{3}{19} \times 57 = 9$$

$$\text{Required result} = 135 - 9 = 126$$

6. (3) Let the third number be  $x$ .

$\therefore$  Second number =  $3x$

First number =  $6x$

$$\therefore (x + 3x + 6x) = 100 \times 3$$

$$\Rightarrow 10x = 300$$

$$\Rightarrow x = 30$$

$\therefore$  The largest number =  $6x$

$$= 6 \times 30 = 180$$

**Aliter :** Using Rule 15,

$$a = 2, b = 3, x = 100$$

Largest number

$$= \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times 3}{1+3+2 \times 3} \times 100$$

$$= \frac{18 \times 100}{10} = 180$$

7. (3) Let the third number be  $x$ .

$\therefore$  Second number =  $3x$

First number =  $6x$

$$\text{Now, } \frac{x+3x+6x}{3} = 10$$

$$\Rightarrow 10x = 30 \Rightarrow x = 3$$

$\therefore$  The largest number

$$= 6x = 6 \times 3 = 18.$$

**Aliter :** Using Rule 15,

$$a = 2, b = 3, x = 10$$

Largest number

$$= \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times 3}{1+3+2 \times 3} \times 10$$

$$= \frac{18}{10} \times 10 = 18$$

$$8. (2) \frac{a+b+c}{3} = 2d$$

$$\Rightarrow a+b+c = 6d \quad \dots(i)$$

$$\text{Also, } \frac{a+b+c+d}{4} = 12$$

$$\Rightarrow a+b+c+d = 48$$

$$\Rightarrow 6d+d = 48$$

$$\Rightarrow 7d = 48$$

$$\Rightarrow d = \frac{48}{7}$$

9. (4) Let the third number =  $x$

$\therefore$  Second number =  $2x$

First number =  $4x$

$$\text{Now, } x + 2x + 4x = 3 \times 77$$

$$\Rightarrow 7x = 3 \times 77$$

$$\Rightarrow x = \frac{3 \times 77}{7} = 33$$

$$\therefore \text{First number} = 33 \times 4 = 132$$

**Aliter :** Using Rule 15,

$$\text{Here, } a = 2, b = 2, x = 77$$

$$\text{First number} = \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times 2}{1+2+2 \times 2} \times 77$$

$$= \frac{12}{7} \times 77$$

$$= 12 \times 11 = 132$$

10. (4) Let the numbers be  $2x, x$  and  $4x$  respectively

$$\therefore \text{Average} = \frac{2x+x+4x}{3}$$

$$\Rightarrow \frac{7x}{3} = 56$$

$$\Rightarrow x = \frac{3 \times 56}{7} = 24$$

$\therefore$  First number

$$= 2x = 2 \times 24 = 48$$

Third number =  $4x$

$$= 4 \times 24 = 96$$

$\therefore$  Required difference

$$= 96 - 48 = 48$$

**Aliter :** Using Rule 15,

$$\text{Here, } a = 2, b = \frac{1}{4}, x = 56$$



**AVERAGE**

First number

$$= \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times \frac{1}{4}}{1 + \frac{1}{4} + 2 \times \frac{1}{4}} \times 56$$

$$= \frac{\frac{3}{2} \times 4}{4+1+2} \times 56 = 48$$

$$\text{Third number} = \frac{3}{1+b+ab} \times x$$

$$= \frac{3}{1 + \frac{1}{4} + 2 \times \frac{1}{4}} \times 56$$

$$= \frac{3 \times 4}{4+1+2} \times 56 = 96$$

Required difference = 96 - 48 = 48

**11.** (1) Let the second number be  $x$ .

$$\text{Then first number} = \frac{x}{2}$$

and third number =  $2x$

According to the question,

$$\frac{x}{2} + x + 2x = 28 \times 3$$

$$\Rightarrow \frac{x + 2x + 4x}{2} = 28 \times 3$$

$$\Rightarrow 7x = 28 \times 3 \times 2$$

$$\Rightarrow x = \frac{168}{7} = 24$$

$\therefore$  Third number =  $2 \times 24 = 48$

**Aliter :** Using Rule 15,

$$\text{Here, } a = \frac{1}{2}, b = \frac{1}{2}, x = 28$$

$$\text{Third Number} = \frac{3}{1+b+ab} \times x$$

$$= \frac{3}{1 + \frac{1}{2} + \frac{1}{2} \times \frac{1}{2}} \times 28$$

$$= \frac{3}{4+2+1} \times 28$$

$$= \frac{3 \times 4 \times 28}{7} = 48$$

**12.** (4) Let the third number be  $x$ .

$\therefore$  Second number =  $3x$

First number =  $6x$

$$\therefore \frac{6x + 3x + x}{3} = 40$$

$$\Rightarrow 10x = 120 \Rightarrow x = 12$$

$\therefore$  Required difference

$$= 6x - x = 5x = 5 \times 12 = 60$$

**Aliter :** Using Rule 15,

Here,  $a = 2, b = 3, x = 40$

Largest Number = First Number

$$= \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times 3}{1+3+2 \times 3} \times 40$$

$$= \frac{18}{10} \times 40 = 72$$

Smallest Number = Third Number

$$= \frac{3}{1+b+ab} \times x$$

$$= \frac{3}{1+3+2 \times 3} \times 40$$

$$= \frac{3}{10} \times 40 = 12$$

Difference = 72 - 12 = 60

**13.** (1) Let the second number be  $x$ .

$\therefore$  First number =  $2x$

$$\therefore \text{Third number} = \frac{2x}{3}$$

$$\therefore 2x + x + \frac{2x}{3} = 49.5 \times 3$$

$$\Rightarrow 6x + 3x + 2x = 49.5 \times 9 = 445.5$$

$$\Rightarrow 11x = 445.5$$

$$\Rightarrow x = \frac{445.5}{11} = 40.5$$

$\therefore$  Required difference

$$= 2x - \frac{2x}{3} = \frac{4x}{3}$$

$$= \frac{4 \times 40.5}{3} = 54$$

**Aliter :** Using Rule 15,

$$\text{Here, } a = 2, b = \frac{3}{2}, x = 49.5$$

$$\text{First Number} = \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times \frac{3}{2}}{1 + \frac{3}{2} + 2 \times \frac{3}{2}} \times 49.5$$

$$\frac{18}{2} \times 49.5$$

$$= \frac{18 \times 49.5}{11} = 18 \times 4.5$$

$$= \frac{18 \times 45}{10} = 81$$

$$\text{Third Number} = \frac{3}{1+b+ab} \times x$$

$$= \frac{3}{1 + \frac{3}{2} + 2 \times \frac{3}{2}} \times 49.5$$

$$= \frac{3}{11} \times 49.5$$

$$= 6 \times 4.5 = 27$$

Difference = 81 - 27 = 54

**14.** (3) Let the first number be  $x$ , then,

$$x = \frac{240 - x}{4}$$

$$\Rightarrow 4x = 240 - x$$

$$\Rightarrow 5x = 240$$

$$\Rightarrow x = \frac{240}{5} = 48$$

**15.** (2) Let the third number be  $x$ .

$\therefore$  Second number =  $3x$

and first number =  $6x$

$$\therefore 6x + 3x + x = 3 \times 20$$

$$\Rightarrow 10x = 60 \Rightarrow x = 6$$

$\therefore$  Required sum =  $6x + x = 7x$

$$= 7 \times 6 = 42$$

**Aliter :**

Here,  $a = 2, b = 3, x = 20$

$$\text{Largest Number} = \frac{3ab}{1+b+ab} \times x$$

$$= \frac{3 \times 2 \times 3}{1+3+2 \times 3} \times 20$$

$$= \frac{18}{10} \times 20 = 36$$

$$\text{Smallest Number} = \frac{3}{1+b+ab} \times x$$

$$= \frac{3}{1+3+2 \times 3} \times 20$$

$$= \frac{3}{10} \times 20 = 6$$

Sum = 36 + 6 = 42



**AVERAGE**

16. (3)  $\frac{3a+4b}{2} > 50$

$$\Rightarrow 3a + 4b > 100$$

$$\Rightarrow 3a + \frac{4a}{2} > 100 \quad [\because a = 2b]$$

$$\Rightarrow 3a + 2a > 100$$

$$\Rightarrow 5a > 100$$

$$\Rightarrow a > 20$$

$\therefore$  Minimum value of  $a = 21$

17. (2) Let the third number be  $x$ ,

$\therefore$  First number =  $3x$

$\therefore$  Second number =  $\frac{3x}{4}$

According to the question,

$$3x + \frac{3x}{4} + x = 3 \times 95$$

$$\Rightarrow \frac{12x + 3x + 4x}{4} = 285$$

$$\Rightarrow 19x = 285 \times 4$$

$$\Rightarrow x = \frac{285 \times 4}{19} = 60$$

**Aliter :** Using Rule 15,

Here,  $a = 4$ ,  $b = \frac{3}{4}$ ,  $x = 95$

$$\text{Third Number} = \frac{3}{1+b+ab} \times x$$

$$= \frac{3}{1+\frac{3}{4}+4 \times \frac{3}{4}} \times 95$$

$$= \frac{3 \times 4}{4+3+12} \times 95 = 60$$

18. (2) Let the first number be  $x$ .

$\therefore$  Second number =  $2x$

and third number =  $\frac{2x}{3}$

According to the question,

$$x + 2x + \frac{2x}{3} = 33 \times 3$$

$$\Rightarrow 3x + \frac{2x}{3} = 99$$

$$\Rightarrow \frac{9x + 2x}{3} = 99$$

$$\Rightarrow 11x = 99 \times 3$$

$$\Rightarrow x = \frac{99 \times 3}{11} = 27$$

$\therefore$  Largest number =  $2x$   
 $= 2 \times 27 = 54$

**TYPE-VI**

1. (3) According to question,  
 Total marks =  $71 \times 14 = 994$   
 Correct total marks  
 $= 994 + (56 - 42) + (32 - 74)$   
 $= 994 + 14 - 42 = 966$

$$\therefore \text{Required average} = \frac{966}{14} = 69$$

**Aliter :** Using Rule 27,

Here  $n = 14$ ,  $m = 71$

$a = 56$ ,  $b = 42$

$p = 32$ ,  $q = 74$

Correct Average

$$= m + \frac{(a+b-p-q)}{n}$$

$$= 71 + \frac{(56+32-42-74)}{14}$$

$$= 71 - \frac{28}{14}$$

$$= 71 - 2 = 69$$

2. (3) Total weight of A, B and C =  $84 \times 3 = 252$  kg.

Again,  $A + B + C + D = 80 \times 4 = 320$  kg.

$\therefore D = (320 - 252)$  kg.

$= 68$  kg.

$E = 68 + 3 = 71$  kg.

$B + C + D + E = 79 \times 4$

$= 316$  kg.

Now,

$(A + B + C + D) - (B + C + D + E)$

$= (320 - 316)$  kg.

$\therefore A - E = 4$  kg.

or  $A = 4 + E = 4 + 71 = 75$  kg.

3. (3) Total length of 20 measurements =  $56 \times 20 = 1120$  cm  
 Correct length of 20 measurements

$$= 1120 - 64 + 61 = 1117$$

$$\text{Correct average} = \frac{1117}{20}$$

$$= 55.85 \text{ cm}$$

**Aliter :** Using Rule 26,

Here,  $n = 20$ ,  $m = 56$

$a = 61$ ,  $b = 64$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 56 + \left( \frac{61-64}{20} \right)$$

$$= 56 - \frac{3}{20}$$

$$= 56 - 0.15 = 55.85 \text{ cm}$$

4. (3) Total marks obtained by 5 students =  $50 \times 5 = 250$ .

Now, in this total marks, 84 is included instead of 48.

$\therefore$  Correct total marks

$$= 250 - 84 + 48 = 214$$

$\therefore$  Correct average

$$= \frac{214}{5} = 42.8$$

**Aliter :**

Here,  $n = 5$ ,  $m = 50$

$a = 48$ ,  $b = 84$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 50 + \frac{(48-84)}{5}$$

$$= 50 - \frac{36}{5}$$

$$= 50 - 7.2 = 42.8$$

5. (4) Weight of the new student

$$= (40 + 15 \times 1.5) \text{ kg}$$

$$= (40 + 22.5) \text{ kg}$$

$$= 62.5 \text{ kg}$$

**Aliter :** Using Rule 18,

Here,  $N = 15$ ,  $T = 40$ ,  $t = 1.5$

Weight of new Person =  $T + Nt$

$$= 40 + 15 \times 1.5$$

$$= 40 + 22.5$$

$$= 62.5 \text{ kg.}$$

6. (3) Total of correct marks

$$= 100 \times 40 - 83 + 53 = 3970$$

$\therefore$  Correct average marks

$$= \frac{3970}{100} = 39.70$$

**Aliter :** Using Rule 26,

Here,  $n = 100$ ,  $m = 40$

$a = 53$ ,  $b = 83$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 40 + \left( \frac{53-83}{100} \right)$$

$$= 40 - \frac{30}{100} = 39.70$$

7. (4) Difference in weight

$$= 87 - 78 = 9 \text{ kg}$$

$\therefore$  Correct average weight

$$= 89.4 + \frac{9}{20}$$

$$= 89.4 + 0.45 = 89.85 \text{ kg}$$

**Aliter :** Using Rule 26,

Here,  $n = 20$ ,  $m = 89.4$

$a = 87$ ,  $b = 78$





**AVERAGE**

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 89.4 + \frac{(87-78)}{20}$$

$$= 89.4 + \frac{9}{20}$$

$$= 89.4 + 0.45 = 89.85 \text{ kg}$$

8. (2) Difference in observations  
 $= 64 + 28 - 46 - 82 = -36$   
 $\therefore$  Correct average

$$= 124 - \frac{36}{18} = 122$$

9. (3) Required average

$$= 30 + \frac{(28+31-82-13)}{50}$$

$$= 30 + \left(-\frac{36}{50}\right)$$

$$= 30 - 0.72 = 29.28$$

**Aliter :** Using Rule 27,

Here,  $n = 50$ ,  $m = 30$

$a = 28$ ,  $b = 31$

$p = 82$ ,  $q = 13$

Correct Average

$$= m + \frac{(a+b-p-q)}{n}$$

$$= 30 + \frac{(28+31-82-13)}{50}$$

$$= 30 + \left(\frac{59-95}{50}\right)$$

$$= 30 - \frac{36}{50}$$

$$= 30 - 0.72 = 29.28$$

10. (2) Difference of two observations  
 $= 73 - 48 = 25$

$$\therefore \text{New average} = 13 + \frac{25}{25} = 14$$

**Aliter :** Using Rule 26,

Here,  $n = 25$ ,  $m = 13$

$a = 73$ ,  $b = 48$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 13 + \frac{(73-48)}{25}$$

$$= 13 + 1 = 14$$

11. (1) Difference  
 $= 15 + 23 - 51 - 32 = -45$   
 $\therefore$  Correct average

$$= 30 - \frac{45}{10} = 25.5$$

**Aliter :** Using Rule 27,

Here,  $n = 10$ ,  $m = 30$

$a = 15$ ,  $b = 23$

$$p = 51, q = 32$$

Correct Average

$$= m + \frac{(a+b-p-q)}{n}$$

$$= 30 + \frac{(15+23-51-32)}{10}$$

$$= 30 + \left(\frac{38-83}{10}\right)$$

$$= 30 - \frac{45}{10}$$

$$= 30 - 4.5 = 25.5$$

12. (3) The sum of 50 observations =  
 $50 \times 36 = 1800$   
 The correct mean

$$= \frac{1800 - 23 + 48}{50}$$

$$= \frac{1825}{50} = 36.5$$

**Aliter :** Using Rule 26,

Here,  $n = 50$ ,  $m = 36$

$a = 48$ ,  $b = 23$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 36 + \frac{(48-23)}{50}$$

$$= 36 + \frac{25}{50} = 36.5$$

13. (1) Difference of numbers  
 $= 64 - 46 = 18$

$$\text{Correct average} = 50 - \frac{18}{10}$$

$$= 50 - 1.8 = 48.2$$

**Aliter :** Using Rule 26,

Here,  $n = 10$ ,  $m = 50$

$a = 46$ ,  $b = 64$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 50 + \frac{(46-64)}{10}$$

$$= 50 - \frac{18}{10}$$

$$= 50 - 1.8 = 48.2$$

14. (3) Correct total of 10 numbers  
 $= 15 \times 10 - 26 + 36$   
 $= 160$

$$\therefore \text{Correct average} = \frac{160}{10} = 16$$

**Aliter :** Using Rule 26,

Here,  $n = 10$ ,  $m = 15$

$a = 36$ ,  $b = 26$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 15 + \frac{(36-26)}{10} = 15 + 1 = 16$$

15. (1) Difference in average = 1.8  
 $\therefore$  Difference between the number and the number formed by interchanging the digits  
 $= 1.8 \times 10 = 18$   
 $(\because 53 - 35 = 18)$   
 $\therefore$  Number = 35  
 $\therefore$  Difference of digits  
 $= 5 - 3 = 2$

16. (3) Difference of numbers  
 $= 82 - 28 = 54$   
 $\therefore$  Required average

$$= 60 + \frac{54}{27} = 62$$

**Aliter :** Using Rule 26,

Here,  $n = 27$ ,  $m = 60$

$b = 28$ ,  $a = 82$

$$\text{New Average} = m + \frac{(a-b)}{n}$$

$$= 60 + \frac{(82-28)}{27}$$

$$= 60 + \frac{54}{27} = 62$$

17. (1) Difference =  $86 - 68 = 18$   
 $\therefore$  Actual average =  $58 + \frac{18}{100}$   
 $= 58.18$

**Aliter :** Using Rule 26,

Here,  $n = 100$ ,  $m = 58$

$a = 86$ ,  $b = 68$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 58 + \frac{(86-68)}{100}$$

$$= 58 + \frac{18}{100}$$

$$= 58 + 0.18 = 58.18$$

18. (1) Difference =  $62 - 26 = 36$   
 $\therefore$  Required average

$$= 47 + \frac{36}{20}$$

$$= 47 + 1.8 = 48.8$$

**Aliter :** Using Rule 26,

Here,  $n = 20$ ,  $m = 47$

$a = 62$ ,  $b = 26$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$



**AVERAGE**

$$= 47 + \frac{(62-26)}{20}$$

$$= 47 + \frac{36}{20}$$

$$= 47 + 1.8 = 48.8$$

- 19. (3)** Difference =  $97 - 79 = 18$

$$\text{True average} = 75 + \frac{18}{20} = 75.9$$

**Aliter :** Using Rule 26,  
 Here,  $n = 20$ ,  $m = 75$   
 $a = 97$ ,  $b = 79$

$$\text{Correct mean} = m + \frac{(a-b)}{n}$$

$$= 75 + \frac{(97-79)}{20}$$

$$= 75 + \frac{18}{20}$$

$$= 75 + 0.9 = 75.9$$

- 20. (2)** Required Average

$$= \frac{100 \times 46 - 61 - 34 + 16 + 43}{90}$$

$$= \frac{4600 - 36}{90} = \frac{4564}{90} = 50.7$$

- 21. (3)** Difference =  $31 - 17 = 14$

$\therefore$  Required average

$$= 18 + \frac{14}{7} = 20$$

**Aliter :** Using Rule 26,  
 Here,  $n = 7$ ,  $m = 18$   
 $a = 31$ ,  $b = 17$

$$\text{New Average} = m + \frac{(a-b)}{n}$$

$$= 18 + \frac{(31-17)}{7}$$

$$= 18 + \frac{14}{7}$$

$$= 18 + 2 = 20$$

- 22. (1)** Let the number of candidates be  $x$ , then

$$60x - 45x = 30 \times 100$$

$$\Rightarrow 15x = 3000$$

$$\Rightarrow x = 200$$

- 23. (1)** Let total number of candidates be  $x$ .

$$\therefore 50x - 30 \times 100 = 45x$$

$$\Rightarrow 5x = 3000$$

$$\Rightarrow x = \frac{3000}{5} = 600$$

- 24. (3)** Corrected mean

$$= \frac{80 \times 10 - 60 + 50}{10}$$

$$= \frac{800 - 10}{10} = \frac{790}{10} = 79$$

**Aliter :** Using Rule 26,  
 Here,  $n = 10$ ,  $m = 80$   
 $a = 50$ ,  $b = 60$

$$\text{Correct Average} = m + \frac{(a-b)}{n}$$

$$= 80 + \frac{(50-60)}{10} = 80 - 1 = 79$$

- 25. (1)** Sum of 9 integers

$$= 9 \times 11 = 99.$$

New average

$$= \frac{90 + 23 - 32}{9} = \frac{90}{9} = 10$$

**Aliter :** Using Rule 26,  
 Here,  $n = 9$ ,  $m = 11$   
 $a = 23$ ,  $b = 32$

$$\text{Correct mean} = m + \frac{(a-b)}{n}$$

$$= 11 + \frac{(23-32)}{9}$$

$$= 11 + \frac{(-9)}{9}$$

$$= 11 - 1 = 10$$

- 26. (3)** Required answer

$$= 30 + 20 \times 0.75$$

$$= 30 \text{ kg} + 15 \text{ kg} = 45 \text{ kg}$$

**Aliter :** Using Rule 18,  
 Here,  $N = 20$ ,  $T = 30$ ,  $t = 0.75$   
 Weight of New student =  $T + Nt$   
 $= 30 + 20 \times 0.75$

$$= 30 + 15 = 45 \text{ kg}$$

- 27. (4)** Total weight increased

$$= 1 \times 25 = 25 \text{ kg}$$

$\therefore$  Weight of new person

$$= 60 + 25 = 85 \text{ kg}$$

**Aliter :** Using Rule 18,  
 Here,  $N = 25$ ,  $T = 60$ ,  $t = 1$   
 Weight of New person =  $T + Nt$   
 $= 60 + 25 \times 1 = 85 \text{ Kg}$

- 28. (3)** Total weight increased

$$= \frac{1}{2} \times 50 = 25 \text{ kg.}$$

$\therefore$  Weight of the new man

$$= 50 + 25 = 75 \text{ kg.}$$

**Aliter :** Using Rule 18,

$$\text{Here, } N = 50, T = 50, t = \frac{1}{2}$$

Weight of New boy =  $T + Nt$

$$= 50 + 50 \times \frac{1}{2} = 75 \text{ kg.}$$

- 29. (4)** Weight of the new oarsman

$$= 60 + 8 \times \frac{3}{2}$$

$$= 60 + 12 = 72 \text{ kg}$$

**Aliter :** Using Rule 18,

$$\text{Here, } N = 8, T = 60, t = \frac{3}{2}$$

Weight of new man =  $T + Nt$

$$= 60 + 8 \times \frac{3}{2}$$

$$= 60 + 12 = 72$$

- 30. (4)** Weight of the new man

$$= 55 + \frac{1}{3} \times 12 = 59 \text{ kg.}$$

**Aliter :** Using Rule 18,

$$\text{Here, } N = 12, T = 55, t = \frac{1}{3}$$

Weight of new man =  $T + Nt$

$$= 55 + 12 \times \frac{1}{3}$$

$$= 55 + 4 = 59 \text{ kg.}$$

- 31. (2)** Marks obtained by eleventh candidate

$$= 22 \times 45 - (10 \times 55 + 11 \times 40)$$

$$= 990 - (550 + 440)$$

$$= 990 - 990 = 0$$

- 32. (3)** Sum of 18 items

$$= 55 \times 20 - 45 - 30$$

$$= 1100 - 75 = 1025$$

$$\therefore \text{Required average} = \frac{1025}{18}$$

$$= 56.9$$

- 33. (3)** Sum of marks of top 5 students =  $40 \times 86 - 35 \times 85$

$$= 3440 - 2975 = 465$$

$$\therefore \text{Their average} = \frac{465}{5} = 93$$

- 34. (1)** Sum of 50 numbers

$$= 50 \times 38 = 1900$$

Sum of 48 numbers

$$= 1900 - 45 - 55 = 1800$$

$\therefore$  Required average

$$= \frac{1800}{48} = 37.5$$



### AVERAGE

35. (4) Required number = sum of six numbers – sum of five numbers

$$= 6 \times 20 - 15 \times 5$$

$$= 120 - 75 = 45$$

36. (4) Difference of correct and incorrect marks =  $64 - 46 = 18$

$\therefore$  Correct mean

$$= 52 + \frac{18}{36} = 52.5$$

**Aliter :** Using Rule 26,

Here,  $n = 36$ ,  $m = 52$

$a = 64$ ,  $b = 46$

$$\text{New mean} = m + \frac{(a-b)}{n}$$

$$= 52 + \frac{(64-46)}{36}$$

$$= 52 + \frac{18}{36}$$

$$= 52 + \frac{1}{2} = 52.5$$

37. (1) Correct average

$$= 35 - \left( \frac{61-16}{20} \right)$$

$$= 35 - \frac{45}{20} = 35 - 2.25 = 32.75$$

**Aliter :** Using Rule 26,

Here,  $n = 20$ ,  $m = 35$

$a = 16$ ,  $b = 61$

$$\text{Correct mean} = m + \frac{(a-b)}{n}$$

$$= 35 + \frac{(16-61)}{20}$$

$$= 35 - \frac{45}{20}$$

$$= 35 - 2.25 = 32.75$$

38. (2) Correct sum of 20 numbers

$$= 20 \times 35 - 45 + 85$$

$$= 700 + 40 = 740$$

$$\therefore \text{Correct average} = \frac{740}{20} = 37$$

**Aliter :** Using Rule 26,

Here,  $n = 20$ ,  $m = 35$

$a = 85$ ,  $b = 45$

$$\text{Correct mean} = m + \frac{(a-b)}{n}$$

$$= 35 + \frac{(85-45)}{20} = 35 + 2 = 37$$

39. (2) Correct sum of marks obtained by the student

$$= 88 \times 6 - 86 + 68$$

$$= 528 - 86 + 68 = 510$$

$$\therefore \text{Correct average} = \frac{510}{6} = 85$$

**Aliter :** Using Rule 26,

Here,  $n = 6$ ,  $m = 88$

$a = 68$ ,  $b = 86$

$$\text{Correct mean} = m + \frac{(a-b)}{n}$$

$$= 88 + \frac{(68-86)}{6}$$

$$= 88 - \frac{18}{6} = 85$$

40. (3) Correct sum of 100 items  
 $= 30 \times 100 - 32 - 12 + 23 + 11$   
 $= 3000 - 44 + 34 = 2990$

$$\therefore \text{Required average} = \frac{2990}{100}$$

$$= 29.9$$

41. (1) Correct sum of numbers  
 $= 10 \times 50 - 64 + 46$   
 $= 500 - 18 = 482$

$$\therefore \text{Correct average} = \frac{482}{10}$$

$$= 48.2$$

42. (2) Correct sum of 9 observations  
 $= 9 \times 35 - 18 + 81$   
 $= 315 + 63 = 378$

$\therefore$  Required correct average

$$= \frac{378}{9} = 42$$

### TYPE-VII

1. (3) Let the no. of wickets taken till the last match be  $n$ .

$\therefore$  Total runs at 24.85 runs per wicket =  $24.85n$

Total runs after the current match =  $24.85n + 52$

Total no. of wickets after the current match =  $n + 5$

Bowling Average after the current match

$$\Rightarrow \frac{24.85n + 52}{n + 5} = 24.85 - 0.85$$

$$\therefore \frac{24.85n + 52}{n + 5} = 24$$

$$\text{or } 24.85n + 52$$

$$= 24n + 120$$

$$\text{or } 0.85n = 120 - 52$$

$$\text{or } n = \frac{68}{0.85} = 80$$

2. (1) Let the batsman make  $x$  runs.  
 Total runs in 10 innings =  $10 \times 32 = 320$

$$\therefore \frac{320 + x}{11} = 32 + 4$$

$$\Rightarrow 320 + x = 36 \times 11$$

$$\Rightarrow x = 396 - 320 = 76$$

**Aliter :** Using Rule 18,

Here,  $T = 32$ ,  $N = 11$ ,  $t = 4$

Required Run =  $T + Nt$

[Here  $N$  is taken as  $(n + 1)$ ]

$$= 32 + 11 \times 4$$

$$= 32 + 44 = 76$$

3. (3) Let the number of wickets taken by the cricketer before the last match =  $x$

According to the question,

$$\frac{12.4x + 26}{x + 5} = 12.2$$

$$\Rightarrow 12.4x + 26 = 12.2x + 61$$

$$\Rightarrow 0.2x = 61 - 26 = 35$$

$$\Rightarrow x = \frac{35}{0.2} = \frac{350}{2} = 175$$

4. (2) Let the cricketer's average of runs for his 64 innings be  $x$  runs.

$\therefore$  Total number of runs in 64 innings =  $64x$

According to the question,

$$\frac{64x + 0}{65} = x - 2$$

$$\Rightarrow 64x = 65x - 130$$

$$\Rightarrow x = 130$$

$\therefore$  New average of runs =  $x - 2$

$$= 130 - 2 = 128$$

5. (3) Let the average of runs of the cricketer in 8 innings be  $x$ .

According to the question,

$$\frac{8x + 100}{9} = x + 9$$

$$\Rightarrow 8x + 100 = 9x + 81$$

$$\Rightarrow x = 100 - 81 = 19$$

$\therefore$  New average of runs =  $19 + 9 = 28$

6. (2) Let the number of runs scored in 11th innings be  $x$ .

$$\therefore 10 \times 50 + x = 11 \times 52$$

$$\Rightarrow 500 + x = 572$$

$$\Rightarrow x = 572 - 500 = 72 \text{ runs}$$

**Aliter :** Using Rule 18,

Here,  $T = 50$ ,

$N = (10 + 1) = 11$ ,  $t = 2$

Required Runs =  $T + Nt$

$$= 50 + 11 \times 2 = 72$$





**AVERAGE**

7. (3) Let the batsman's average in 11 innings be  $x$  runs.  
 $\therefore \frac{11x + 90}{12} = x - 5$   
 $\Rightarrow 11x + 90 = 12x - 60$   
 $\Rightarrow x = 150$   
 $\therefore$  Required average =  $150 - 5 = 145$
8. (4) Let the highest score be  $x$ .  
 $\therefore$  Lowest score =  $x - 172$   
 $\therefore x + x - 172 = 40 \times 50 - 38 \times 48$   
 $\Rightarrow 2x - 172 = 2000 - 1824 = 176$   
 $\Rightarrow 2x = 176 + 172 = 348$   
 $\therefore x = \frac{348}{2} = 174$
9. (4) Let the cricketer's highest score be  $x$  runs.  
 $\therefore 60 \times 62 + x + x - 180 = 64 \times 62$   
 $\Rightarrow 3720 + 2x - 180 = 3968$   
 $\Rightarrow 2x = 428$   
 $\Rightarrow x = 214$  runs
10. (3) If the average in 10 tests be  $x$ , then,  
 $x \times 10 + 100 = (x + 5) \times 11$   
 $\Rightarrow 11x - 10x = 100 - 55$   
 $\Rightarrow x = 45$   
 $\therefore$  Required average = 50
11. (2) Required runs =  $60 + 11 \times 2 = 82$  runs  
**Aliter :** Using Rule 18,  
 Here,  $T = 60$ ,  $N = (10 + 1)$   
 $t = 62 - 60 = 2$   
 Required Runs =  $T + Nt$   
 $= 60 + 11 \times 2 = 82$
12. (3) Total runs =  $20 \times 7.2 = 144$   
 Total runs in 15 overs =  $15 \times 6 = 90$   
 Runs to be scored in the next 5 overs =  $144 - 90 = 54$   
 $\therefore$  Required run-rate =  $\frac{54}{5} = 10.8$
13. (2) Extra runs =  $12 \times 2 = 24$   
 $\therefore$  Required average =  $63 - 24 = 39$
14. (2) Lowest score =  $x$   
 Highest score =  $x + 100$   
 $\therefore 28 \times 38 + x + x + 100 = 30 \times 40$   
 $\Rightarrow 1064 + 2x + 100 = 1200$   
 $\Rightarrow 2x = 1200 - 1164 = 36$   
 $\Rightarrow x = 18$
15. (3) Sachin's new average =  $x$  runs  
 Total runs in 11 innings

- =  $11(x - 5)$   
 $\therefore 11(x - 5) + 120 = 12x$   
 $\therefore 12x - 11x = 65$   
 $\therefore x = 65$  runs
16. (4) Required number of wickets =  $x$  (let)  
 According to question,  
 $12.4 \times x + 26 = (x + 5)(12.4 - 0.4) = (x + 5) \times 12$   
 $\Rightarrow 12.4x + 26 = 12x + 60$   
 $\Rightarrow 12.4x - 12x = 60 - 26$   
 $\Rightarrow 0.4x = 34$   
 $\Rightarrow x = \frac{34}{0.4} = \frac{340}{4} = 85$
17. (4) Runs scored in the next innings =  $x$  (let)  
 According to the question,  
 $10 \times 32 + x = 11 \times 38$   
 $\Rightarrow 320 + x = 418$   
 $\Rightarrow x = 418 - 320 = 98$   
**Aliter :** Using Rule 18,  
 Here,  $T = 32$ ,  
 $N = (10 + 1) = 11$ ,  $t = 6$   
 Required Runs =  $T + Nt$   
 $= 32 + 11 \times 6 = 32 + 66 = 98$
18. (1) Average runs in 16 innings =  $87 - 17 \times 3 = 87 - 51 = 36$   
 $\therefore$  Required average =  $36 + 3 = 39$  runs
19. (4) Let the highest score of cricketer be  $x$  runs.  
 $\therefore$  His lowest score =  $(x - 172)$  runs  
 According to the question,  
 $38 \times 48 + x + x - 172 = 40 \times 50$   
 $\Rightarrow 1824 - 172 + 2x = 2000$   
 $\Rightarrow 1652 + 2x = 2000$   
 $\Rightarrow 2x = 2000 - 1652 = 348$   
 $\therefore x = \frac{348}{2} = 174$  runs
20. (1) Total runs scored by the cricketer in 20 innings =  $32 \times 20 = 640$   
 If the runs scored in 21st innings be  $x$ , then  
 $640 + x = 21 \times 36$   
 $\Rightarrow 640 + x = 756$   
 $\Rightarrow x = 756 - 640 = 116$
21. (3) Average runs after 12 innings =  $x$  (let)  
 Average runs after 11 innings =  $x - 5$   
 According to the question,  
 $12x = (x - 5) \times 11 + 120$   
 $\Rightarrow 12x - 11x = 120 - 55$   
 $\Rightarrow x = 65$

22. (4) Runs scored by the cricketer in the 6th innings =  $6 \times 60 + 6 \times 65 - 11 \times 63 = 360 + 390 - 693 = 57$
23. (3) Total runs scored by remaining 10 cricketers =  $23 \times 11 - 113 = 253 - 113 = 140$   
 $\therefore$  Required average =  $\frac{140}{10} = 14$  runs
24. (3) Number of runs scored in 100th innings =  $100 \times 100 - 99 \times 99 = 10000 - 9801 = 199$

**OR**

- Increase in average = 1 run  
 $\therefore$  Runs scored in 100th innings =  $100 + 99 = 199$
25. (3) Total runs scored in first 10 overs =  $3.2 \times 10 = 32$   
 Runs to be scored in remaining 40 overs =  $282 - 32 = 250$   
 $\therefore$  Required run-rate =  $\frac{250}{40} = 6.25$
26. (3) Let the number of wickets before the last match be  $x$ .  
 According to the question,  
 $12.4x + 22 = (x + 5) \times 12$   
 $\Rightarrow 12.4x + 22 = 12x + 60$   
 $\Rightarrow 12.4x - 12x = 60 - 22$   
 $\Rightarrow 0.4x = 38$   
 $\Rightarrow x = \frac{38}{0.4} = \frac{380}{4} = 95$
27. A batsman has a certain average of runs for 12 innings. In the 13th innings he scores 96 runs thereby increasing his average by 5 runs. What will be his average after 13th innings?  
 (1) 28                      (2) 32  
 (3) 36                      (4) 42

(SSC CGL Tier-II (CBE)  
Exam. 12.01.2017)

**TYPE-VIII**

1. (4) Total sum of five numbers =  $27 \times 5 = 135$   
 Total sum of four numbers =  $25 \times 4 = 100$   
 $\therefore$  Required number =  $135 - 100 = 35$
2. (2) Total marks of 28 students =  $28 \times 50 = 1400$   
 Total marks of 20 students =  $20 \times 55 = 1100$   
 $\therefore$  Total marks of 8 students =  $1400 - 1100 = 300$   
 $\therefore$  Average =  $\frac{300}{8} = 37.5$



### AVERAGE

3. (3) Total weight 12 parcels  
 $= 12 \times 1.8 = 21.6$  kg.  
 New average of 13 parcels  
 $= 1.8 - 0.05 = 1.75$  kg.  
 Total weight of 13 parcels  
 $= 13 \times 1.75 = 22.75$  kg.  
 $\therefore$  Weight of new parcel  
 $= 22.75 - 21.6 = 1.15$  kg.  
**Aliter :** Using Rule 18,  
 Here,  $T = 1.8$ ,  $N = (12 + 1) = 13$

$$t = \frac{50}{1000} = .05$$

$$\begin{aligned} \text{Weight of new parcel} &= T - Nt \\ &= 1.8 - 13 \times 0.05 \\ &= 1.8 - 0.65 \\ &= 1.15 \text{ kg} \end{aligned}$$

4. (3) Required average

$$= \frac{38 \times 50 - 45 - 55}{48}$$

$$= \frac{1800}{48} = 37.5$$

5. (3) Weight of the student who left  
 $= 50 \times 45 - 49 \times 44.9$   
 $= 2250 - 2200.1 = 49.9$  kg.

6. (1) Weight of teacher  
 $= 50 + 26 \times 1 = 76$  kg

**Aliter :** Using Rule 24,  
 Here,  $N = 50$ ,  $T = 45$ ,

$$t = \frac{1}{10} = 0.1$$

$$\begin{aligned} \text{Weight of teacher} &= \text{Average} + x(n+1) \\ &= 50 + 1(25+1) \\ &= 50 + 26 = 76 \text{ kg} \end{aligned}$$

7. (4) Suppose the initial expenditure per day = ₹  $x$

$$\Rightarrow \frac{x}{35} - \frac{x+42}{42} = 1$$

$$\Rightarrow \frac{6x - 5x - 210}{210} = 1$$

$$\Rightarrow x = 210 + 210 = ₹ 420$$

8. (2) Let the new observation be  $x$ . Then,

$$\frac{x + 6 \times 45.5}{7} = 47$$

$$\Rightarrow x + 273 = 47 \times 7 = 329$$

$$\Rightarrow x = 329 - 273 = 56$$

**Aliter :** Using Rule 24,

$$\begin{aligned} \text{Here, } x &= (47 - 45.5) = 1.5 \\ n &= 6 \end{aligned}$$

$$\begin{aligned} \text{New observation} &= \text{Average} + x(n+1) \\ &= 45.5 + 1.5(6+1) \\ &= 45.5 + 10.5 = 56 \end{aligned}$$

9. (3) Required number  
 $= 5 \times 140 - 4 \times 130$   
 $= 700 - 520 = 180$

**Aliter :** Using Rule 25,

$$\begin{aligned} \text{Here, } x &= (140 - 130) = 10 \\ n &= 5 \end{aligned}$$

$$\begin{aligned} \text{Excluded number} &= \text{Average} + x(n-1) \\ &= 140 + 10 \times 4 = 180 \end{aligned}$$

10. (3) Sum of the three new numbers  
 $= 8 \times 8.5 - 5 \times 7 = 68 - 35 = 33$

$$\therefore \text{Required average} = \frac{33}{3} = 11$$

11. (3) Change =  $2 \times 3 - 3 \times 4 = -6$

$$\therefore \text{New average} = 32 - \frac{6}{6} = 31$$

12. (4) Weight of the teacher

$$= 42 \text{ kg.} + \frac{35 \times 400}{1000} \text{ kg}$$

$$= 42 + 14 = 56 \text{ kg.}$$

**Aliter :** Using Rule 24,

$$\text{Here, } x = \frac{400}{100} = 0.4, n = 34$$

$$\begin{aligned} \text{Weight of teacher} &= \text{Average} + x(n+1) \\ &= 42 + 0.4(34+1) \\ &= 42 + 14 = 56 \text{ kg} \end{aligned}$$

13. (3)  $4C = 22 \times 4 - 20 \times 4$   
 $= 88 - 80 = 8$

$$\Rightarrow C = \frac{8}{4} = 2$$

14. (2) Total weight of 40 children  
 $= 40 \times 36.2 \text{ kg} = 1448 \text{ kg}$

$$\begin{aligned} \text{Total weight of 43 children} &= 1448 + 42.3 + 39.7 + 39.5 \\ &= 1569.5 \text{ kg} \end{aligned}$$

$$\begin{aligned} \therefore \text{Required average weight} &= \frac{1569.5}{43} = 36.5 \text{ kg} \end{aligned}$$

15. (1) Let the number of boys be  $x$  and that of girls be  $y$ .

$$\begin{aligned} \therefore 71x + 73y &= 71.8(x+y) \\ \Rightarrow 71.8x - 71x &= 73y - 71.8y \\ \Rightarrow 0.8x &= 1.2y \end{aligned}$$

$$\Rightarrow \frac{x}{y} = \frac{1.2}{0.8} = \frac{12}{8} = \frac{3}{2}$$

$$\therefore \frac{x}{y} + 1 = \frac{3}{2} + 1 \Rightarrow \frac{x+y}{y} = \frac{5}{2}$$

$$\therefore \text{Percentage of girls}$$

$$= \frac{y}{x+y} \times 100 = \frac{2}{5} \times 100 = 40\%$$

16. (1) Total increase =  $3.6 \times 10$   
 $= 36$

$\therefore$  If the number be  $10x + y$ , then  
 Number obtained after reversing  
 the digits =  $10y + x$

$$\therefore 10y + x - 10x - y = 36$$

$$\Rightarrow 9y - 9x = 36$$

$$\Rightarrow 9(y-x) = 36$$

$$\Rightarrow y-x = \frac{36}{9} = 4$$

17. (3) Sum of three new numbers  
 $= 8 \times 8.5 - 7 \times 5$   
 $= 68 - 35 = 33$

$$\therefore \text{Required average} = \frac{33}{3}$$

$$= 11$$

### TYPE-IX

1. (4) Total age of 14 girls + 1 teacher  
 $= 15 \times 15 = 225$  yrs.

Average age of 14 girls = 14 yrs.

$$\therefore \text{Total age of 14 girls}$$

$$= 14 \times 14 = 196 \text{ yrs.}$$

$$\therefore \text{Teacher's age}$$

$$= 225 - 196 = 29 \text{ yrs.}$$

2. (1) Average age of 4 brothers  
 $= 12$  yrs.

$$\text{Total age of 4 brothers} = 4 \times 12 = 48 \text{ yrs.}$$

$$\text{Average age of 4 brothers + mother (= 5 persons)}$$

$$= 12 + 5 = 17 \text{ yrs.}$$

$$\therefore \text{Total age of 4 brothers + mother} = 5 \times 17 = 85 \text{ yrs.}$$

$$\therefore \text{The age of the mother}$$

$$= 85 - 48 = 37 \text{ yrs.}$$

**Aliter :** Using Rule 24,

$$\text{Here, } x = 5, n = 4$$

$$\begin{aligned} \text{Age of mother} &= \text{Average} + x(n+1) \\ &= 12 + 5(4+1) \end{aligned}$$

$$= 12 + 25 = 37 \text{ years}$$

3. (2) Age of new person  
 $= 8 \times 2 + 24$

$$= 16 + 24 = 40 \text{ years}$$

4. (4) Overall increase in the total age =  $8 \times 2 = 16$  years

$$\therefore \text{Total age of two new men}$$

$$= 21 + 23 + 16 = 60 \text{ years}$$

$$\therefore \text{Average age of new men}$$

$$= \frac{60}{2} = 30 \text{ years}$$



### AVERAGE

**Aliter :** Using Rule 23,

Here,  $x = 2$ ,  $n = 8$

Age of new person

= Age of replaced person +  $x$

=  $24 + 2 \times 8$

=  $24 + 16 = 40$  years

**5. (2) Trick**

Average age of new players

$$= \left\{ (20 + 17)11 \times \frac{2}{12} \right\} \times \frac{1}{2}$$

$$\frac{422}{12 \times 2} = \frac{211}{12} \Rightarrow 17 \frac{7}{12}$$

= 17 years 7 months

**6. (4) New average age of class**

$$= \frac{20 \times 12 + 5 \times 7}{25} = \frac{240 + 35}{25}$$

$$= \frac{275}{25} = 11 \text{ years}$$

**7. (4) Using Rule 10,**

Average age

$$= \frac{10 \times 12.5 + 20 \times 13.1}{10 + 20}$$

$$= \frac{125 + 262}{30} = 12.9 \text{ years}$$

**8. (1) Required average**

$$= \frac{5 \times 12 + 3 \times 16}{5 + 3} = \frac{60 + 48}{8}$$

$$= \frac{108}{8} = \frac{27}{2} = 13 \frac{1}{2} \text{ years}$$

**9. (4) The average age is reduced by 3 years.**

$\therefore$  Age of the retired teacher

=  $25 + 3 \times 10 = 55$  years

**10. (2) Total age of 40 old students**

=  $40 \times 15 = 600$  years.

Total age of 40 old and 10 new students =  $50 \times 15.2 = 760$  years

$\therefore$  Total age of 10 new students =

$760 - 600 = 160$  years.

$\therefore$  Required average age

$$= \frac{160}{10} = 16 \text{ years.}$$

**11. (3) Sum of the present ages of whole family =  $36 \times 4 = 144$  years**  
Sum of the ages of the family at the birth of youngest member

=  $144 - 4 \times 12 = 96$  years

$\therefore$  Required Average age

$$= \frac{96}{3} = 32 \text{ years}$$

**12. (2) Total age of 20 new students**

=  $(60 \times 18.5 - 40 \times 18)$  years

=  $(1110 - 720)$  years

= 390 years

$\therefore$  Their average age

$$= \frac{390}{20} = 19.5 \text{ years}$$

= 19 years 6 months

**13. (2) Required average age**

$$= \left( \frac{20 \times 15 + 25 \times 24}{20 + 25} \right) \text{ years}$$

$$= \left( \frac{300 + 600}{45} \right) \text{ years}$$

$$= \left( \frac{900}{45} \right) \text{ years} = 20 \text{ years}$$

**14. (3) Total increase =  $11 \times 2$**

= 22 months

$\therefore$  Sum of the age of both cricketers

=  $(18 + 20)$  years 22 months

= 38 years 22 months

$\therefore$  Average age = 19 years 11 months

**15. (3) Sum of the age of two new persons**

=  $30 + 34 + 3 \times 8$

= 88 years

$\therefore$  Required average

$$= \frac{88}{2} = 44 \text{ years}$$

**16. (4) Sum of the present age of 10 members**

=  $20 \times 10 = 200$  years

Total age of 9 members, 10 years ago

= 100 years

Required average

$$= \frac{100}{9} = 11 \frac{1}{9} \text{ years}$$

**17. (1)  $A + B + C + D = 20$  years**

$\Rightarrow A + B + D = 20 - 8 = 12$  years

Now,  $A + B + D + E = 24$  years

$\therefore E = 24 - 12 = 12$  years

**18. (3) Present age of  $(P + Q)$**

=  $30 + 10 = 40$  years

$(P + Q + R)$ 's present age

=  $20 \times 3 = 60$  years

R's present age =  $60 - 40$

= 20 years

$\therefore$  R's age after 10 years

=  $20 + 10 = 30$  years

**19. (3) After five years of marriage,**

Husband + wife + child

=  $46 + 10 + 1$

= 57 years

At the time of birth of child,

Husband + wife + child

=  $57 - 3 = 54$  years

$\therefore$  Required average age

$$= \frac{54}{3} = 18 \text{ years}$$

**20. (1) Sum of present ages of 9 member family =  $18 \times 9$**

= 162 years

Sum of 8 member's present ages

=  $18 \times 8 + 2 \times 8$

=  $144 + 16 = 160$  years

Child's age =  $162 - 160$

= 2 years

**21. (2) Age of new boy**

$$= \left( 10 + \frac{2 \times 42}{12} \right) = 17 \text{ years}$$

**22. (4) Ram + two children = 51 years**

His wife + two children

= 48 years

$\therefore$  Ram - wife = 3 years

$\Rightarrow 33 - \text{wife} = 3$  years

$\therefore$  Wife =  $33 - 3 = 30$  years

**23. (3)  $A + B = 2 \times 20 = 40$**

$C + B = 2 \times 19 = 38$

$C + A = 2 \times 21 = 42$

On adding all three,

$2(A + B + C)$

=  $40 + 38 + 42 = 120$

$\Rightarrow A + B + C = 60$

$\therefore A = (A + B + C) - (B + C)$

=  $60 - 38 = 22$  years

$B = (A + B + C) - (A + C)$

=  $60 - 42 = 18$  years

$C = (A + B + C) - (A + B)$

=  $60 - 40 = 20$  years

**24. (1) Sum of the present age of family members =  $33 \times 5 = 165$  years**  
9 years ago,

Sum of their age

=  $165 - 9 \times 5 = 120$  years

$$\therefore \text{Required average age} = \frac{120}{4}$$

= 30 years





### AVERAGE

25. (2) Total age of 12 players  
 $= 12 \times 25 = 300$   
 Total age including captain  
 $= 13 \times 26 = 338$

$\therefore$  Age of the captain  
 $= 338 - 300 = 38$  years

**Aliter :** Using Rule 23,

Here,  $x = 1$ ,  $n = 12$

Age of the captain

$= \text{Average} + x(n + 1)$

$= 25 + 1(12 + 1) = 38$  years

26. (1) Total age of 40 boys

$= 40 \times 16 = 640$  years

New total age of 40 boys

$= 40 \times 15.875 = 635$  years

$\therefore$  Age of new boy

$= [635 - (640 - 17)] = 12$  years

**Aliter :** Using Rule 23,

Here,  $n = 40$

$x = 16 - 15.875$

$x = 0.125$

Age of new boy

$= \text{Age of replaced boy} - xn$

$= 17 - 0.125 \times 40$

$= 17 - 5 = 12$  years

27. (2) Total age of 30 boys

$= 30 \times 15 = 450$  years

One boy, aged 20 years, left the class

Now, total age of 29 boys

$= 450 - 20 = 430$  years

Again, two new boys join the class

Then, the total age of 31 boys

$= 15 \times 31 = 465$  years

$\therefore$  Age of two new boys

$= 465 - 430 = 35$  years

Let the individual age of two boys be  $x$  and  $y$  years

$\therefore x + y = 35$

$x - y = 5$  (According to the question)

$\therefore 2x = 40$

$x = \frac{40}{2} = 20$  years

$\therefore y = 15$  years

$\therefore$  Age of the younger new comer  
 $= 15$  years

28. (4) Age of new boy

$= 18$  years - total decrease

$= (18 - 0.1 \times 30)$  years

$= 15$  years

**Aliter :** Using Rule 23,

Here,  $x = 17 - 16.9 = 0.1$

$n = 30$

Age of new boy

$= \text{Age of replaced boy} - xn$

$= 18 - 0.1 \times 30$

$= 18 - 3 = 15$  years

29. (3) Let the mother's age

$= x$  years

$\therefore$  Father's age  $= (x + 8)$  years

Sum of age of 6 sons

$= 8 \times 6 = 48$  years

Sum of age of 6 sons and parents  $= 22 \times 8 = 176$  years.

$\therefore$  Age of Parents  $= 176 - 48$

$= 128$  years

$\Rightarrow x + x + 8 = 128$

$\Rightarrow 2x = 120$

$\Rightarrow x = 60$

Hence, mother's age  $= 60$  years

30. (2) Total age decreased

$= 10 \times 3 = 30$  years.

$\therefore$  Age of the retired teacher

$= 25 + 30 = 55$  years.

**Aliter :** Using Rule 23,

Here,  $n = 10$ ,  $x = 3$

Age of new teacher

$= \text{Age of retired teacher} - xn$

$25 = \text{Age of retired teacher}$

$- 10 \times 3$

$= \text{Age of retired teacher}$

$= 25 + 30 = 55$  years

31. (2) Total age of 5 members, 3

years ago  $= 17 \times 5 = 85$  years

Total age of 5 members, now

$= (85 + 3 \times 5) = 100$  years

Total age of 6 members, now

$= 17 \times 6 = 102$  years

$\therefore$  Age of the baby

$= 102 - 100 = 2$  years

**Aliter :** Using Rule 17,

Here,  $t = 3$ ,  $N = 5$

$T = 17$ ,  $n = 1$

Present age of baby  $= nT - Nt$

$= 1 \times 17 - 5 \times 3$

$= 17 - 15 = 2$  years

32. (2) Reduction in total age of 45

persons  $= 45 \times \frac{1}{9}$

Age of the new person

$= 60 - 45 \times \frac{1}{9} = 55$  years

**Aliter :** Using Rule 23,

Age of new corner

$= \text{Age of replaced}$

member  $- xn = 60 - 45 \times \frac{1}{9}$

$= 60 - 5 = 55$  years

33. (3)  $H + W + S = 42 \times 3 = 126$

$(H + W + S) + D + C = 36 \times 5$   
 $= 180$

$(126 + 6 \times 3) + D + C = 180$

$\Rightarrow (126 + 18) + D + C = 180$

$\Rightarrow 144 + D + C = 180$

$\Rightarrow D + C = 180 - 144 = 36$

$\therefore$  Age of daughter-in-law at the time of marriage (D).

$= 36 - (6 + 6) = 24$  years

34. (2) Let the age of younger boy be  $x$  years.

$\therefore$  Age of older boy

$= (x + 5)$  years.

Then, total age of 30 boys

$= 30 \times 15 = 450$  years.

Total age of 31 boys after two newcomers join & 1 left

$= 450 - 20 + x + x + 5$

$= 435 + 2x$

Clearly,  $435 + 2x = 31 \times 15$

$\Rightarrow 2x = 465 - 435$

$\Rightarrow x = \frac{30}{2} = 15$  years

35. (2) The age of the teacher

$= (24 + 1) \times 15 - 24 \times (15 - 1)$

$= 25 \times 15 - 24 \times 14$

$= 375 - 336 = 39$  years.

36. (3) Total age decrease

$= 24 \times 1 = 24$  months  $= 2$  years

$\therefore$  Age of newcomer  $= 18 - 2$

$= 16$  years.

37. (4) Total age of 30 students

$= 9 \times 30 = 270$  years

Total age of 30 students and a teacher  $= 31 \times 10 = 310$  years

$\therefore$  Age of the teacher

$= 310 - 270 = 40$  years

38. (3) Total age increase

$= 2 \times 24 = 48$  months  $= 4$  years

$\therefore$  Age of the new boy

$= 10 + 4 = 14$  years.

39. (3) Sum of the present age of A,

B, C and D  $= 45 \times 4 + 4 \times 5$

$= 180 + 20 = 200$  years

Sum of the present age of A, B, C, D and E  $= 49 \times 5 = 245$  years

$\therefore$  Present age of E

$= (245 - 200)$  years  $= 45$  years

40. (2) Father + mother

$= 2 \times 35 = 70$  years

Father + mother + son

$= 27 \times 3 = 81$  years

$\therefore$  Son's age  $= 81 - 70 = 11$  years



**AVERAGE**

- 41.** (2) Teacher's age  
 $= 16 \times 10 - 19 \times 4 - 5 \times 10$   
 $= 160 - 76 - 50 = 34$  years
- 42.** (1) Sum of the present age of P, Q and R  
 $= (25 \times 3 + 3 \times 5)$  years  
 $= (75 + 15)$  years = 90 years  
 Sum of the present age of Q and R =  $(20 \times 2 + 2 \times 7)$  years = 54 years  
 $\therefore$  p's present age =  $(90 - 54)$  years = 36 years
- 43.** (2) Total age of 11 players  
 $= 11 \times 20 = 220$  years  
 Total age of 11 players and the coach =  $12 \times 22 = 264$  years  
 $\therefore$  Age of the coach =  $(264 - 220)$  years = 44 years
- 44.** (4) Sum of the present age of husband and wife  
 $= 2 \times 27 + 8 = 62$  years  
 Sum of the present age of husband, wife and child =  $21 \times 3 = 63$  years  
 $\therefore$  present age of the child =  $63 - 62 = 1$  year
- 45.** (2) Sum of the present age of husband and wife  
 $= 2 \times 25 + 2 \times 4 = 58$  years  
 Sum of the present age of husband, wife and child =  $3 \times 20 = 60$  years  
 $\therefore$  Child's present age =  $60 - 58 = 2$  years
- 46.** (2) Sum of the present age of P and Q.  
 $= 2 \times 25 + 10 = 60$  years  
 Sum of the present age of P, Q and R =  $25 \times 3 = 75$  years  
 $\therefore$  R's present age =  $75 - 60 = 15$  years  
 $\therefore$  R's age after 5 years = 20 years
- 47.** (1) Let the number of students be n. Then,  

$$7 = \frac{n \times 6 + 12 \times 40}{n + 12}$$

$$\Rightarrow 7n + 84 = 6n + 480$$

$$\Rightarrow n = 480 - 84 = 396$$
- 48.** (2) Number of girls = x  
 Number of boys =  $600 - x$   
 $\therefore (600 - x) \times 12 + 11x$   

$$= 11\frac{3}{4} \times 600 = \frac{47}{4} \times 600$$

$$\Rightarrow 7200 - 12x + 11x = 7050$$

$$\Rightarrow x = 7200 - 7050 = 150$$

- 49.** (2) Average age of the whole group  

$$= \frac{3 \times 20 + 4 \times 21 + 3 \times 22}{10}$$

$$= \frac{60 + 84 + 66}{10} = \frac{210}{10}$$

$$= 21$$
 years
- 50.** (3) Present age of child  
 $= 17 \times 6 - (17 \times 5 + 3 \times 5)$   
 $= 102 - (85 + 15) = 102 - 100 = 2$  years
- 51.** (1) Total age of remaining 6 children =  $12 \times 7 - 6$   
 $= 84 - 6 = 78$  years  
 $\therefore$  Their average age =  $\frac{78}{6}$   
 $= 13$  years
- 52.** (3) Total age of three youngsters  
 $= 33 \times 3 - 11 \times 3 = 99 - 33 = 66$  years  
 $\therefore$  Required average =  $\frac{66}{3} = 22$  years
- 53.** (1) Required average  

$$= \frac{8 \times 3 + 20 \times 2 + 26 \times m + 29 \times 1}{3 + 2 + m + 1}$$

$$\Rightarrow 17 = \frac{24 + 40 + 26m + 29}{6 + m}$$

$$\Rightarrow 17(6 + m) = 93 + 26m$$

$$\Rightarrow 102 + 17m = 93 + 26m$$

$$\Rightarrow 26m - 17m = 102 - 93$$

$$\Rightarrow 9m = 9 \Rightarrow m = 1$$
- 54.** (4) Increase in ages of five members in 3 years  
 $= (3 \times 5)$  years = 15 years  
 As average age remains same,  
 $\therefore$  Required difference = 15 years
- 55.** (1) Three years ago,  
 Total age of the family =  $17 \times 5 = 85$  years  
 Total age of 5 member family today =  $85 + 15 = 100$  years  
 Total age of the family with child today =  $17 \times 6 = 102$  years  
 Age of baby =  $102 - 100 = 2$  years
- 56.** (3) Five years ago, total age of five members =  $17 \times 5 = 85$  years  
 Sum of their present ages =  $85 + 3 \times 5 = 100$  years  
 Sum of present ages of 6 members =  $17 \times 6 = 102$  years  
 $\therefore$  Present age of baby =  $102 - 100 = 2$  years

- 57.** (2) Total age of 5-member family 3 years ago =  $17 \times 5 = 85$  years  
 Their total present age =  $85 + 3 \times 5 = 100$  years  
 Total present age of 6 members =  $17 \times 6 = 102$  years  
 $\therefore$  Present age of child =  $102 - 100 = 2$  years
- 58.** (1) According to question,  

$$\frac{P + Q + R}{3} = R + 5$$

$$\Rightarrow P + Q + R = 3R + 15$$

$$\Rightarrow P + Q = 3R - R + 15$$

$$\Rightarrow 2R + 15 = P + Q = 39$$

$$\Rightarrow 2R = 39 - 15 = 24$$

$$\Rightarrow R = \frac{24}{2} = 12$$
 years
- 59.** (3) Total present age of 5-member family  
 $= (17 \times 5 + 3 \times 5)$  years  
 $= 85 + 15 = 100$  years  
 Total present age of 6-member family =  $17 \times 6 = 102$  years  
 $\therefore$  Present age of child =  $102 - 100 = 2$  years
- 60.** (2) Total present age of family  
 $= (2 \times 23 + 2 \times 5 + 1)$  years  
 $= (46 + 10 + 1)$  years = 57 years  
 $\therefore$  Required average =  $\frac{57}{3}$   
 $= 19$  years
- 61.** (4) Total age of initial 30 students = 14 years 4 months  $\times 30$   
 $= 430$  years  
 Total age of 35 students = 13 years 9 months  $\times 35$   
 $= (455 + 26)$  years 3 months = 481 years 3 months  
 $\therefore$  Total age of 4 new students = 481 years 3 months - 430 years - 9 years 11 months = 481 years 3 months - 439 years 11 months = 41 years 4 months  
 $\therefore$  Required average =  $\frac{41 \text{ years 4 months}}{4}$   
 $= 10$  years 4 months
- 62.** (1) Age of the retired teacher =  $(25 + 3 \times 10)$  years = 55 years



**AVERAGE**

- 63.** (4) Mother + 6 children  $\Rightarrow 12 \times 7 = 84$  years  
 6 children  $\Rightarrow 6 \times 7 = 42$  years  
 $\therefore$  Mother's age  $\Rightarrow 84 - 42 = 42$  years
- 64.** (3) Sum of the ages of 4 members of family  
 $= (28 \times 5 - 20)$  years  
 $= (140 - 20)$  years = 120 years  
 $\therefore$  Required average  $= \frac{120}{4}$   
 $= 30$  years
- 65.** (2) According to the question,  
 Sum of the present ages of husband, wife and child  
 $= 3 \times (27 + 3)$   
 $= 3 \times 30$  years = 90 years  
 Sum of the presents age of wife and child  
 $= 2((20 + 5))$   
 $= 50$  years  
 $\therefore$  Husband's present age  
 $= 90 - 50 = 40$  years
- 66.** (2) Rita's age 2 years ago  
 $= x$  years  
 $\therefore$  Pushpa's present age  
 $= 2x$  years  
 According to the question,  
 $2x - (x + 2) = 2$   
 $\Rightarrow x - 2 = 2 \Rightarrow x = 4$  years  
 $\therefore$  Pushpa's present age  
 $= 2 \times 4 = 8$  years
- 67.** (1) Age of tenth child  
 $= (9 \text{ years } 9 \text{ months}) \times 10 - (8 \text{ years } 11 \text{ months}) \times 9$   
 $= 97 \text{ years } 6 \text{ months} - 80 \text{ years } 3 \text{ months}$   
 $= 17 \text{ years } 3 \text{ months}$
- 68.** (3) Daughter's present age  
 $= x$  years (let)  
 $\therefore$  Mother's present age  
 $= (60 - x)$  years  
 According to the question,  
 12 years ago,  
 $(60 - x - 12) = 8(x - 12)$   
 $\Rightarrow 48 - x = 8x - 96$   
 $\Rightarrow 8x + x = 96 + 48$   
 $\Rightarrow 9x = 144$   
 $\Rightarrow x = \frac{144}{9} = 16$  years
- 69.** (3) Difference between ages  
 $= 39 - 55 = -16$  years  
 $\therefore$  Required average  
 $= 40 - \frac{16}{8} = 38$  years

- 70.** (1) Total age of 4 children  
 $= 4 \times 12 = 48$  years  
 Total age of 4 children and father  
 $= 20 \times 5 = 100$  years  
 $\therefore$  Father's age  
 $= (100 - 48)$  years = 52 years
- 71.** (2) Let teacher's age be  $x$  years.  
 According to the question,  
 $36 \times 14 + x = 37 \times 15$   
 $\Rightarrow 504 + x = 555$   
 $\Rightarrow x = 555 - 504 = 51$  years
- 72.** (4) Teacher's age = 10 years + total increase =  $(10 + 31)$  years  
 $= 41$  years
- 73.** (3) Ram's present age =  $x$  years  
 $\therefore$  Shyam's present age  
 $= (x + 20)$  years  
 According to the question,  
 5 years ago,  
 $\frac{x - 5}{x + 20 - 5} = \frac{3}{5}$   
 $\Rightarrow \frac{x - 5}{x + 15} = \frac{3}{5}$   
 $\Rightarrow 5x - 25 = 3x + 45$   
 $\Rightarrow 5x - 3x = 25 + 45$   
 $\Rightarrow 2x = 70$   
 $\Rightarrow x = \frac{70}{2} = 35$   
 $\therefore$  Sum of present ages of Ram and Shyam  
 $= (2x + 20)$  years  
 $= (2 \times 35 + 20)$  years  
 $= 90$  years
- 74.** (1) Total age of the family 3 years ago  
 $= 5 \times 17 = 85$  years  
 Total present age of the family  
 $= 85 + 15 = 100$  years  
 Let the child's present age be  $x$  years.  
 According to the question,  
 $100 + x = 17 \times 6 = 102$   
 $\Rightarrow x = 102 - 100 = 2$  years
- 75.** (1) Sum of the present ages of A, B and C  
 $= (51 \times 3 + 3 \times 7)$  years  
 $= (153 + 21)$  years = 174 years  
 Again,  
 $A = B + 3 = C + 6$   
 $B = C + 3$   
 $\therefore A + B + C = 174$   
 $\Rightarrow C + 6 + C + 3 + C = 174$   
 $\Rightarrow 3C = 174 - 9 = 165$   
 $\Rightarrow C = \frac{165}{3} = 55$  years  
 $\therefore A = C + 6 = 55 + 6 = 61$  years  
 $B = C + 3 = 55 + 3 = 58$  years

- 76.** (3) Total age of boys =  $ax$  years  
 Total age of girls =  $by$  years  
 $\therefore$  Required average  $= \frac{ax + by}{x + y}$
- 77.** (2) Age of teacher = 15 years + total increase  
 $= 15 \text{ years} + (40 \times 3) \text{ months}$   
 $= 15 \text{ years} + \left(\frac{40 \times 3}{12}\right) \text{ years}$   
 $= (15 + 10) \text{ years} = 25 \text{ years}$
- 78.** (4) According to the question,  
 Average age remains same.  
 $\therefore$  Fourth friend's age = Average age of three friends  
 $= 23$  years.
- 79.** (1) Let the number of boys in the class be  $3x$  and that of girls be  $2x$ .  
 $\therefore$  Average age of class  
 $= \frac{3x \times 18 + 2x \times 12}{3x + 2x}$   
 $= \frac{54x + 24x}{5x} = \frac{78}{5}$   
 $= 15.6$  years

**TYPE-X**

- 1.** (1) Let average production of a company in 9 months be  $x$  items  
 $\therefore$  According to question,  
 $4375 = \frac{3 \times 4000 + 9 \times x}{12}$   
 or,  $4375 \times 12 = 12 \times 1000 + 9 \times x$   
 $\therefore 9 \times x = 12(4375 - 1000)$   
 $= 12 \times 3375$   
 $\therefore x = \frac{12 \times 3375}{9} = 4500$
- 2.** (3) Let the number of white balls be  $x$ .  
 $\therefore$  Number of red balls =  $(10 - x)$   
 $\therefore 10 \times 28 = x \times 30 + 25(10 - x)$   
 $\Rightarrow 280 = 30x + 250 - 25x$   
 $= 5x + 250$   
 $\Rightarrow 5x = 280 - 250 = 30$   
 $\Rightarrow x = 6$
- 3.** (3) Let mean score of remaining  
 $55\% = x$   
 $52 = \frac{20 \times 80 + 25 \times 31 + 55 \times x}{100}$   
 $\Rightarrow 5200 = 1600 + 775 + 55x$   
 $\Rightarrow 55x = 5200 - 1600 - 775$   
 $55x = 2825$   
 $\therefore x = \frac{2825}{55} = 51.36 \approx 51.4\%$





**AVERAGE**

4. (1) Let the number of successful students =  $x$   
 $\therefore$  Number of unsuccessful students =  $120 - x$   
 According to the question,  
 $x \times 39 + (120 - x) \times 15$   
 $= 120 \times 35$   
 $\Rightarrow 39x - 15x + 1800 = 4200$   
 $\Rightarrow 24x = 4200 - 1800 = 2400$   
 $\Rightarrow x = 100$

5. (2) Total salary of 3 years  
 $= ₹ (380 \times 9 + 420 \times 12 + 460 \times 12 + 500 \times 3)$   
 $= ₹ (3420 + 5040 + 5520 + 1500)$   
 $= ₹ 15480$

Average monthly salary

$$= \frac{15480}{36} = ₹ 430$$

$\therefore$  Amount of pension

$$= \frac{430}{2} = ₹ 215$$

6. (2) Let the total number of workers be  $x$ .  
 Total salary of all the workers =  $8000x$   
 Total salary of 7 technicians =  $7 \times 12000$   
 $= ₹ 84000$   
 Total salary of  $(x - 7)$  workers =  $(x - 7) 6000$   
 $\therefore (x - 7) 6000 + 84000$   
 $= 8000x$   
 or  $8000x - 6000x$   
 $= 84000 - 42000$   
 or  $2000x = 42000$   
 or  $x = \frac{42000}{2000} = 21$

7. (1) Total age of 15 students  
 $= 15 \times 15 = 225$  years.  
 Total age of 5 students  
 $= 5 \times 14 = 70$  years  
 Total age of other 9 students =  $9 \times 16 = 144$  years  
 $\therefore$  The age of 15th student  
 $= 225 - (70 + 144)$   
 $= 225 - 214 = 11$  years.

8. (3) Let the number of minors be  $x$ .  
 According to the question,  
 $\frac{8 \times 15 + x \times 6}{8 + x} = 10.8$   
 $\Rightarrow 120 + 6x = 86.4 + 10.8x$   
 $\Rightarrow 10.8x - 6x = 120 - 86.4$   
 $\Rightarrow 4.8x = 33.6$   
 $\Rightarrow x = \frac{33.6}{4.8} = 7$

9. (3) Let the number of other workers be  $x$ .  
 $\therefore$  Number of agricultural workers =  $11x$   
 $\therefore$  Required average monthly income  
 $= \frac{S \times 11x + x \times T}{(11x + x)}$   
 $= ₹ \frac{11S + T}{12}$

10. (2) Let the number of boys and girls in the class be  $x$  and  $y$  respectively.  
 $\therefore 60x + 80y = 68(x + y)$   
 $\Rightarrow 60x + 80y = 68x + 68y$   
 $\Rightarrow 8x = 12y$

$$\Rightarrow 2x = 3y \Rightarrow y = \frac{2}{3}x$$

$\therefore$  Required percentage

$$= \frac{x}{x + y} \times 100$$

$$= \frac{x}{x + \frac{2}{3}x} \times 100$$

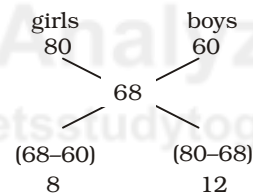
$$= \frac{3x}{3x + 2x} \times 100$$

$$= \frac{3}{5} \times 100 = 60\%$$

By Alligation method

**Method 2 :**

According to the question,



Ratio of girls to boys =  $8 : 12$   
 $= 2 : 3$

$\therefore$  Percentage of boys

$$= \frac{3}{5} \times 100 = 60\%$$

11. (3) Let the number of workers be  $x$ .  
 According to the question,  
 $7 \times 10000 + (x - 7) 7800$   
 $= x \times 8500$   
 $\Rightarrow 700 + 78x - 78 \times 7$   
 $= 85x$   
 $\Rightarrow 85x - 78x = 700 - 546$   
 $\Rightarrow 7x = 154$

$$\Rightarrow x = \frac{154}{7} = 22$$

12. (1)  $A + B + C = 3 \times 80$   
 $= ₹ 240$

$$\begin{aligned} \text{Then money spent} &= 240 - 180 = 60 \\ \Rightarrow A + 2A + 3A &= 60 \\ \Rightarrow 6A &= 60 \\ \Rightarrow A &= ₹ 10 \end{aligned}$$

13. (4) Let the number of boys in the class be  $3x$ . The ratio of boys and girls in the class is  $3 : 1$ , then the number of girls in the class is  $x$ .

$\therefore$  Average score of the girls

$$\begin{aligned} &= \frac{(3x + x) \times A - 3x(A + 1)}{x} \\ &= \frac{4xA - 3xA - 3x}{x} \end{aligned}$$

$$= \frac{xA - 3x}{x} = \frac{x(A - 3)}{x} = A - 3$$

14. (3) Total number of ' $m$ ' numbers  
 $= m \times n^2$   
 Total number of ' $n$ ' numbers  
 $= n \times m^2$   
 $\therefore$  Average of  $(m + n)$  numbers

$$= \frac{mn^2 + m^2n}{m + n} = \frac{mn(n + m)}{m + n} = mn$$

15. (3)  $x + y + z = 3 \times 45 = 135$  ... (i)

$$x = \frac{y + z}{2} + 9$$

$$\Rightarrow 2x - y - z = 18$$
 ... (ii)

$$\text{and, } \frac{y + z}{2} = y + 2$$

$$\Rightarrow y + z = 2y + 4$$
 ... (iii)

$$\begin{aligned} \Rightarrow z - y &= 7 \\ \text{By equations (i) + (ii),} \\ 3x &= 135 + 18 = 153 \end{aligned}$$

$$\Rightarrow x = 51$$

$$\begin{aligned} \text{By equations (i) and (iii),} \\ x + y + z + z - y &= 135 + 4 = 139 \end{aligned}$$

$$\begin{aligned} \Rightarrow x + 2z &= 139 \\ \Rightarrow 51 + 2z &= 139 \\ \Rightarrow 2z &= 139 - 51 = 88 \\ \therefore z &= 44 \end{aligned}$$

$$\therefore x - z = 51 - 44 = 7$$

16. (1) Annual expenditure of the man  
 $= ₹ (5 \times 5000 + 7 \times 5400)$   
 $= ₹ (25000 + 37800)$   
 $= ₹ 62800$

Annual savings = ₹ 2300

$\therefore$  Average monthly income

$$= ₹ \left( \frac{62800 + 2300}{12} \right)$$

$$= ₹ \left( \frac{65100}{12} \right) = ₹ 5425$$



**AVERAGE**

- 17.** (2) Sum of the eight numbers  
 $= 20 \times 8 = 160$   
 Sum of the first two numbers  
 $= 31$   
 Sum of the next three numbers  
 $= \frac{64}{3} \times 3 = 64$   
 Let the sixth number  $= x$   
 $\therefore$  Seventh number  $= x + 4$   
 and eighth number  $= x + 7$   
 $\therefore 31 + 64 + x + x + 4 + x + 7 = 160$   
 $\Rightarrow 3x + 106 = 160$   
 $\Rightarrow 3x = 160 - 106 = 54$   
 $\Rightarrow x = \frac{54}{3} = 18$   
 $\therefore$  Eighth number  
 $= x + 7 = 18 + 7 = 25$
- 18.** (4) If average cost of 1 pen  
 $= ₹ x$ , then  
 $30x + 75 \times 2 = 510$   
 $\Rightarrow 30x = 510 - 150 = 360$   
 $\Rightarrow x = \frac{360}{30} = ₹ 12$
- 19.** (3) If the number of students in section A be  $x$  and that in section B be  $y$ , then  
 $74 = \frac{77.5 \times x + y \times 70}{x + y}$   
 $\Rightarrow 74x + 74y = 77.5x + 70y$   
 $\Rightarrow 77.5x - 74x = 74y - 70y$   
 $\Rightarrow 3.5x = 4y$   
 $\Rightarrow \frac{x}{y} = \frac{4}{3.5} = \frac{8}{7}$   
 $\Rightarrow 8 : 7$
- 20.** (2) Required average weight  
 $= \frac{30 \times 16 + 20 \times 15.5}{50}$   
 $= \frac{480 + 310}{50} = \frac{790}{50} = 15.8 \text{ kg.}$
- 21.** (2) Number of non-teaching staff  $= x$   
 $\therefore 20 \times 12000 + x \times 5000$   
 $= (x + 20) \times 10000$   
 $\Rightarrow 240000 + 5000x = (x + 20) \times 10000$   
 $\Rightarrow 240 + 5x = (x + 20) \times 10$   
 $\Rightarrow 10x - 5x = 240 - 200$   
 $\Rightarrow 5x = 40$   
 $\Rightarrow x = \frac{40}{5} = 8$
- 22.** (4) C = 5 years 2 months  
 B = 8 years 6 months  
 A = 13 years 1 month  
 $\therefore$  Average  
 $= \frac{26 \text{ years } 9 \text{ months}}{3}$

- $$\left[ \frac{26 \frac{9}{12}}{3} = \frac{26 \text{ years } 9 \text{ months}}{3} \right]$$
- $$= 8 \text{ years } 11 \text{ months}$$
- 23.** (3)  $\frac{x + \frac{1}{x}}{2} = M$   
 $\Rightarrow x + \frac{1}{x} = 2M$   
 Required average  
 $= \frac{x^2 + \frac{1}{x^2}}{2} = \frac{\left(x + \frac{1}{x}\right)^2 - 2}{2}$   
 $= \frac{4M^2 - 2}{2} = 2M^2 - 1$
- 24.** (3) Weight of first member  $= x \text{ kg}$   
 Weight of second member  
 $= (x + 2) \text{ kg}$   
 .....  
 Weight of fifth member  
 $= (x + 8) \text{ kg}$   
 $\therefore$  Difference  $= x + 8 - x = 8 \text{ kg}$
- 25.** (3) Expenditure of 9th person  $= ₹ x$   
 $\therefore x - \frac{x + 8 \times 30}{9} = 20$   
 $\therefore \frac{9x - x - 240}{9} = 20$   
 $\Rightarrow 8x - 240 = 180$   
 $\Rightarrow 8x = 240 + 180 = 420$   
 $\Rightarrow x = \frac{420}{8} = 52.5$   
 Total expenditure  $= 52.5 + 240$   
 $= ₹ 292.5$
- 26.** (3) Required average rate of reading  
 $= \frac{100 + 100}{\frac{100}{60} + \frac{100}{40}}$   
 $= \frac{200}{\frac{5}{3} + \frac{5}{2}} = \frac{200}{\frac{10 + 15}{6}}$   
 $= \frac{200 \times 6}{25} = 48 \text{ pages/hour}$
- 27.** (1) Let each exam be of 100 marks.  
 $\therefore$  Difference  $= 82 - 77 = 5$   
 $\therefore 5 \equiv 100 \text{ marks}$   
 $\therefore 25 \equiv 500 \text{ marks}$   
 $\therefore$  Required marks  
 $= 500 \times \frac{80}{100} = 400$

- 28.** (2) Sales tax on the article sold at ₹ 400  
 $= \frac{400 \times 7}{100} = ₹ 28$   
 Sales tax on the article sold at ₹ 6400  
 $= \frac{6400 \times 9}{100} = ₹ 576$   
 Total tax  $= 28 + 576 = ₹ 604$   
 Percentage sales tax  
 $= \frac{604}{6800} \times 100$   
 $= \frac{151}{17} = 8 \frac{15}{17} \%$
- 29.** (1) Number of students in class A  $= x$   
 Number of students in class B  $= y$   
 $\therefore 25x + 40y = 30(x + y)$   
 $\Rightarrow 25x + 40y = 30x + 30y$   
 $\Rightarrow 30x - 25x = 40y - 30y$   
 $\Rightarrow 5x = 10y$   
 $\Rightarrow \frac{x}{y} = \frac{10}{5} = 2 : 1$
- 30.** (2) Quantity of milk :  
 First year  $\Rightarrow \frac{4080}{7.5}$   
 $= 544 \text{ litres}$   
 Second year  $\Rightarrow \frac{4080}{8}$   
 $= 510 \text{ litres}$   
 Third year  $\Rightarrow \frac{4080}{8.5}$   
 $= 480 \text{ litres}$   
 $\therefore$  Required average  
 $= \frac{3 \times 4080}{544 + 510 + 480}$   
 $= \frac{12240}{1534} = ₹ 7.98 \text{ per litre}$
- 31.** (3) Ratio of values  
 $= 15 \times 3 : 10 \times 2 : 5 \times 5$   
 $= 45 : 20 : 25$   
 $\therefore$  Required average cost  
 $= \frac{45 + 20 + 25}{10} = \frac{90}{10} = ₹ 9$
- 32.** (2) Average cost of 1 bag of rice  
 $= ₹ \left( \frac{7 \times 800 + 8 \times 1000 + 5 \times 1200}{7 + 8 + 5} \right)$   
 $= ₹ \left( \frac{5600 + 8000 + 6000}{20} \right)$   
 $= \frac{19600}{20} = ₹ 980$
- 33.** (3) Arithmetic mean  
 $= \frac{3^{30} + 3^{60} + 3^{90}}{3}$   
 $= 3^{29} + 3^{59} + 3^{89}$



### AVERAGE

- 34.** (3) Let the amount spent by tenth person be Rs  $x$ ,  
According to the question,

$$x - \frac{40 \times 9 + x}{10} = 9$$

$$\Rightarrow \frac{10x - 360 - x}{10} = 9$$

$$\Rightarrow 9x - 360 = 90$$

$$\Rightarrow 9x = 360 + 90 = 450$$

$$\Rightarrow x = \frac{450}{9} = \text{Rs. } 50$$

$$\therefore \text{Total expenditure} = 40 \times 9 + x \\ = 360 + 50 = \text{Rs. } 410$$

- 35.** (2) Number of girls =  $4x$

Number of boys =  $5x$

$\therefore$  Required average marks

$$= \frac{4x \times 85 + 5x \times 87}{4x + 5x}$$

$$= \frac{340 + 435}{9} = \frac{775}{9} = 86.1$$

- 36.** (3) Sales on Sunday

$$= \text{Rs. } (6 \times 15640 - 5 \times 14124)$$

$$= \text{Rs. } (93840 - 70620)$$

$$= \text{Rs. } 23220$$

- 37.** (2) Total number of customers in 15 movie theatres

$$= 15 \times 600 = 9000$$

$\therefore$  Required average number of

$$\text{customers} = \frac{9000}{9} = 1000$$

- 38.** (3) Number of non-working days last year

$$= 5 \times 16 = 80$$

Number of non-working days this year

$$= 80 + 3 \times 10 - 2 \times 5 = 100$$

$$\therefore \text{Required average} = \frac{100}{5} = 20$$

- 39.** (4) Let the maximum temperature of Chennai be  $x^\circ\text{C}$ .

According to the question,

$$\frac{35^\circ + 33^\circ + 34^\circ + x^\circ}{4} = 35^\circ$$

$$\Rightarrow 102^\circ + x^\circ = (35 \times 4)^\circ = 140^\circ$$

$$\Rightarrow x^\circ = 140^\circ - 102^\circ = 38^\circ\text{C}$$

- 40.** (2) Let the contribution of president be Rs.  $x$ .

According to the question,

$$x - \frac{x + 800}{9} = 50$$

$$\Rightarrow \frac{9x - x - 800}{9} = 50$$

$$\Rightarrow 8x - 800 = 50 \times 9$$

$$\Rightarrow 8x = 450 + 800 = 1250$$

$$\Rightarrow x = \frac{1250}{8} = \text{Rs. } 156.25$$

- 41.** (3) Total annual income of (A + B) = Rs. (2 × 80000)

$$= \text{Rs. } 160000 \quad \dots (i)$$

$$\text{Total annual income of (B + C)} = \text{Rs. } (2 \times 75000)$$

$$= \text{Rs. } 150000 \quad \dots (ii)$$

$$\text{Total annual income of (C + A)} = \text{Rs. } (2 \times 78000)$$

$$= \text{Rs. } 156000 \quad \dots (iii)$$

On adding all three,

$$\text{Total annual income of } 2(A + B + C) \\ = \text{Rs. } (160000 + 150000 + 156000) \\ = \text{Rs. } 466000$$

$$\therefore \text{Total annual income of (A + B + C)} \\ = \text{Rs. } 233000 \quad \dots (iv)$$

$$\therefore \text{A's annual income} = \text{Equation (iv) - (ii)} \\ = \text{Rs. } (233000 - 150000)$$

$$= \text{Rs. } 83000$$

- 42.** (2) Total savings by 10 students = Rs. (10 × 600) = Rs. 6000

Three of the students have no savings.

Total savings by 6 students

$$= \text{Rs. } (6000 - 1300) = \text{Rs. } 4700$$

Let the savings by each of 5 students be Rs. 250.

$\therefore$  Largest amount of savings

$$= \text{Rs. } (4700 - 5 \times 250)$$

$$= \text{Rs. } (4700 - 1250)$$

$$= \text{Rs. } 3450$$

- 43.** (1) Let the number of members of Indian army be  $x$ .

$$\therefore \text{Number of European army} = 12000 - x$$

According to the question,

$$\frac{5 \times \frac{9}{12} \times x + 5 \times \frac{10}{12} \times (12000 - x)}{12000} \\ = 5 \times \frac{39}{48}$$

$$\Rightarrow \frac{69x}{12} + \frac{70}{12} \times 12000 - \frac{70x}{12}$$

$$= \frac{279}{48} \times 12000$$

$$\Rightarrow 69x + 840000 - 70x$$

$$= 837000$$

$$\Rightarrow x = 840000 - 837000 = 3000$$

- 44.** (2) Difference =  $-83 + 53$

$$= -30$$

$\therefore$  Decrease in average

$$= \frac{-30}{100} = -0.3$$

$\therefore$  Required average

$$= 40 - 0.3 = 39.7$$

- 45.** (1) Total collection

$$= \text{Rs. } (2 \times 15 + 5 \times 7.5 + 13 \times 2.5)$$

$$= \text{Rs. } (30 + 37.5 + 32.5)$$

$$= \text{Rs. } 100$$

Required average

$$= \text{Rs. } \left( \frac{100}{2 + 5 + 13} \right) = \text{Rs. } \left( \frac{100}{20} \right)$$

$$= \text{Rs. } 5$$

- 46.** (1) Weight of new parcel

$$= 1.7 \text{ kg.} - \text{Total decrease}$$

$$= \left( 1.7 - \frac{60 \times 11}{1000} \right) \text{ kg.}$$

$$= (1.7 - 0.66) \text{ kg.}$$

$$= 1.04 \text{ kg.}$$

- 47.** (3) According to the question,

$$M + T + W + Th = 60 \times 4$$

$$= 240^\circ \quad \dots (i)$$

$$T + W + Th + F = 63 \times 4$$

$$= 252^\circ \quad \dots (ii)$$

By equation (ii) - (i),

$$F - M = 252^\circ - 240^\circ = 12^\circ$$

$$\Rightarrow 25x - 21x = 12^\circ$$

$$\Rightarrow 4x = 12^\circ \Rightarrow x = \frac{12^\circ}{4} = 3^\circ$$

$\therefore$  Temperature on Friday =  $25x$

$$= 25 \times 3 = 75^\circ$$

- 48.** (2) Required total points scored

$$= 84 \times 8 - (92 - 85)$$

$$= 672 - 7 = 665$$

- 49.** (4) Let the previous average price be Rs.  $x$ .

According to the question,

$$60x + 336 = (x - 1) 64$$

$$\Rightarrow 60x + 336 = 64x - 64$$

$$\Rightarrow 64x - 60x = 336 + 64$$

$$\Rightarrow 4x = 400$$

$$\Rightarrow x = \frac{400}{4} = \text{Rs. } 100$$

- 50.** (3) According to the question,

$$A + B + C = 84 \times 3$$

$$= 252 \text{ kg.} \quad \dots (i)$$

$$A + B + C + D = 80 \times 4$$

$$= 320 \text{ kg.} \quad \dots (ii)$$

By equation (ii) - (i),

$$D = 320 - 252 = 68 \text{ kg.}$$

$$E = 68 + 3 = 71 \text{ kg.}$$

$$\therefore B + C + D + E = 79 \times 4$$

$$= 316 \text{ kg.}$$

$$\Rightarrow B + C + 68 + 71 = 316$$

$$\Rightarrow B + C = 316 - 68 - 71$$

$$= 177 \text{ kg.} \quad \dots (iii)$$

By equation (i) - (iii),

$$\text{A's weight} = (252 - 177) \text{ kg.}$$

$$= 75 \text{ kg.}$$

□□□





## TEST YOURSELF

- The average salary of 12 officers in a factory is Rs. 3950 per month and that of other employees of the factory is Rs. 1850 per month. If the average salary of all employees (including the officers) of the factory be Rs. 2150 per month, find the total number of employees in the factory.  
 (1) 80 (2) 85  
 (3) 84 (4) 86
- In a class there are 40 boys and their average age is 16 years. One boy aged 17 years leaves the school and another joins, and their average age becomes 15.95 years. What is the age of the new boy?  
 (1) 14 years (2) 15 years  
 (3) 16 years (4) 18 years
- The average weight of 29 students is 40 kg. If the weight of teacher be included, the average weight is increased by 300 gms. The weight of the teacher is :  
 (1) 49 kg (2) 56 kg  
 (3) 58 kg (4) None of these
- The difference between the ages of two sisters is half the difference between the ages of their parents. The elder sister is 18 years of age. Their father's age was 32 years when the younger sister was born who is now 15 years old. What is their mother's age?  
 (1) 40 (2) 41  
 (3) 42 (4) 43
- The average of five results is 46 and that of first four is 45. Find the value of the fifth result.  
 (1) 50 (2) 60  
 (3) 45 (4) 40
- Out of three numbers, the first is twice of the second and is half of the third. If the average of three numbers is 56, find the largest number.  
 (1) 50 (2) 48  
 (3) 96 (4) 75
- The average of three numbers is 42. The first is twice the second and the second is twice the third. What is the difference between the largest and the smallest number?  
 (1) 50 (2) 46  
 (3) 48 (4) 54
- The average age of three boys is 15 years. If their ages are in the ratio 3 : 5 : 7, what is the age of the youngest boy?  
 (1) 9 years  
 (2) 8 years  
 (3) 8 years 3 months  
 (4) None of these
- $a, b, c, d$  and  $e$  are five consecutive odd numbers. What is their average?  
 (1)  $a + 2$  (2)  $a + 4$   
 (3)  $a + 3$  (4)  $a + 1$
- The average height of 30 girls out of a class of 40 is 160 cms and that of the remaining girls is 156 cms. What is the average height of the whole class?  
 (1) 155cm (2) 157 cm  
 (3) 159 cm (4) None of these
- The average of 50 numbers is 38. If two numbers, namely 45 and 55 are discarded, what is the average of the remaining numbers?  
 (1) 38.5 (2) 36.5  
 (3) 35.5 (4) 37.5
- The average of 25 results is 18; that of first twelve is 14 and of last twelve is 17. Find the thirteenth result.  
 (1) 68 (2) 78  
 (3) 79 (4) 87
- The average of ten numbers is calculated as 15. It was discovered later on that while calculating the average one number namely 36 was wrongly read as 26. Find the correct average.  
 (1) 16 (2) 18  
 (3) 19 (4) 16.5
- Out of four numbers, the average of first three is 15 and that of last three is 16. If the last number is 19, find the first number.  
 (1) 14 (2) 15  
 (3) 16 (4) 18
- The average of 6 observations is 12. A new seventh observation is included and the new average is decreased by 1. Find the seventh observation.  
 (1) 5 (2) 7  
 (3) 8 (4) 9
- The average of 8 numbers is 21. If each of the numbers is multiplied by 8, find the average of new set of numbers.  
 (1) 166 (2) 168  
 (3) 170 (4) 172
- The average height of 40 students is 163 cm. On a particular day, three students namely A, B, C were absent and the average of the remaining 37 students was found to be 162 cm. If A and B have equal height and the height of C be 2 cm less than that of A, find the height of A.  
 (1) 170 cm (2) 172 cm  
 (3) 176 cm (4) 174 cm
- The average age of a committee of eight members is 40 years. A member aged 55 years retired and his place was taken by another member aged 39 years. Find the average age of the present committee.  
 (1) 38 years (2) 36 years  
 (3) 39 years (4) 40 years
- The average weight of 3 men A, B and C is 84 kg. Another man D joins the group and the average now becomes 80 kg. If another man E whose weight is 3 kg more than that of D, replaces A, then the average weight of B, C, D and E becomes 79 kg. Find the weight of A.  
 (1) 72 kg (2) 74 kg  
 (3) 75 kg (4) 76 kg

### SHORT ANSWERS

1. (3)	2. (2)	3. (1)	4. (2)
5. (1)	6. (3)	7. (4)	8. (1)
9. (2)	10. (3)	11. (4)	12. (2)
13. (1)	14. (3)	15. (1)	16. (2)
17. (3)	18. (1)	19. (3)	



### AVERAGE

#### EXPLANATIONS

1. (3) Let the number of employees other than officers be  $x$ .

$\therefore$  Total salary of officers  
= Rs.  $(12 \times 3950)$

Total salary of other employees  
= Rs.  $(x \times 1850)$

$$\begin{aligned}\therefore 2150(x+12) &= 12 \times 3950 + 1850x \\ \Rightarrow 2150x + 25800 &= 47400 + 1850x \\ \Rightarrow 2150x - 850x &= 47400 - 25800 \\ \Rightarrow 300x &= 21600\end{aligned}$$

$$\therefore x = \frac{21600}{300} = 72$$

$\therefore$  Total number of employees  
 $= x + 12 = 72 + 12 = 84$

2. (2) Total age of 40 boys initially =  $16 \times 40 = 640$  years

Total age of 39 boys  
 $= 640 - 17 = 623$  years

New total age =  $40 \times 15.95$   
 $= 638$  years

Age of new boy =  $638 - 623$   
 $= 15$  years

3. (1) Weight of teacher

$$\begin{aligned}&= \left( \frac{30 \times 300}{1000} + 40 \right) \text{ kg} \\ &= 49 \text{ kg}\end{aligned}$$

4. (2) Father's present age

$$\begin{aligned}&= 32 + 15 = 47 \text{ years} \\ \therefore 47 - x &= 2 \quad (18 - 15) = 6 \\ \Rightarrow x &= 47 - 6 = 41 \text{ years}\end{aligned}$$

5. (1) Sum total of five results

$$\begin{aligned}&= 5 \times 46 = 230 \\ \text{Sum total of first four results} \\ &= 4 \times 45 = 180 \\ \text{So, fifth result} &= 230 - 180 = 50.\end{aligned}$$

6. (3) Let the first number be  $x$ .

$$\text{Second number} = \frac{x}{2}$$

$$\text{Third number} = 2x$$

$$\text{Average} = \frac{x + \frac{x}{2} + 2x}{3} = \frac{7}{6}x$$

$$\text{Given : } \frac{7}{6}x = 56 \Rightarrow x = 48$$

So, the three numbers are 48, 24 and 96.

7. (4) Let the third number be  $x$

$$\text{Second number} = 2x$$

$$\text{First number} = 4x$$

$$\text{Average} = \frac{x + 2x + 4x}{3} = \frac{7x}{3}$$

$$\text{Given : } \frac{7x}{3} = 42$$

$$\text{or } x = 18$$

The smallest number is  $x = 18$

The largest number =  $4x = 72$

Difference =  $72 - 18 = 54$ .

8. (1) Let the age of three boys be  $3x$ ,  $5x$  and  $7x$

$$\text{Average age} = \frac{3x + 5x + 7x}{3} = 5x$$

$$\text{and } 5x = 15$$

$$x = 3 \text{ years}$$

The age of the youngest boy =  $3x$   
 $= 9$  years.

9. (2) Each successive odd number exceeds its predecessor by 2.

$$\begin{aligned}a + b + c + d + e &= a + (a + 2) + (a + 4) + (a + 6) + (a + 8) \\ &= 5a + 20 = 5(a + 4)\end{aligned}$$

$$\text{Average} = \frac{5(a + 4)}{5} = a + 4.$$

10. (3) Total height of the whole class  
 $= (30 \times 160) + (40 - 30) \times 156$   
 $= 6360$  cms

$$\begin{aligned}\text{Average height of the whole class} \\ &= \frac{6360}{40} = 159 \text{ cms.}\end{aligned}$$

11. (4) Sum total of 50 numbers =  $38 \times 50 = 1900$

Sum total of remaining 48 numbers

$$= 1900 - (45 + 55) = 1800$$

$$\text{and their average} = \frac{1800}{48} = 37.5.$$

12. (2) Sum of 25 results

$$\begin{aligned}&= \text{Average} \times \text{their number} \\ &= 18 \times 25 = 450\end{aligned}$$

Similarly,

Sum of 1st twelve results

$$= 12 \times 14 = 168$$

and sum of last twelve results

$$= 12 \times 17 = 204$$

$\therefore$  Thirteenth result

$$= 450 - 168 - 204 = 78$$

13. (1) Since 36 was misread as 26, i.e., 26 was counted while calculating average.

Incorrect average = 15

$$\therefore \text{Incorrect sum of ten numbers} = 10 \times 15 = 150$$

$\therefore$  Correct sum total

$$= 150 + 36 - 26 = 160$$

$$\therefore \text{Correct average} = \frac{160}{10} = 16$$

14. (3) Sum of all four numbers  
 $= 3 \times 15 + 19 = 64$

Sum of last three numbers

$$= 3 \times 16 = 48$$

$$\text{So, first number} = 64 - 48 = 16$$

15. (1) Seventh observation = Sum of 7 observations - Sum total of 6 observations

$$= (7 \times 11) - (6 \times 12) = 77 - 72 = 5$$

16. (2) Sum of eight numbers

$$= 8 \times 21 = 168$$

Now, each of the numbers is multiplied by 8.

$$\therefore \text{Sum of new eight numbers}$$

$$= 168 \times 8 = 1344$$

$$\therefore \text{Average of new set of numbers}$$

$$= \frac{1344}{8} = 168$$

17. (3) Let the height of A, B, C be  $x$  cm,  $x$  cm and  $(x - 2)$  cm respectively.

Now, sum of height of 40 students  
 $= 163 \times 40 = 6520$  cm

Sum of height of 37 students excluding A, B and C

$$= 162 \times 37 = 5994 \text{ cm.}$$

$$\therefore \text{Sum of heights of A, B and C}$$

$$= (6520 - 5994) = 526 \text{ cm}$$

$$\Rightarrow x + x + x - 2 = 526$$

$$\Rightarrow 3x = 526 + 2 = 528$$

$$\Rightarrow x = \frac{528}{3} = 176 \text{ cm}$$

$$\therefore \text{Height of A} = 176 \text{ cm}$$

18. (1) Sum of age of 8 members =  $8 \times 40 = 320$  years

After a person of age 55 years retires,

Sum of ages of 7 persons

$$= 320 - 55 = 265 \text{ years}$$

Sum of ages of 8 persons when a man of age 39 years joins it

$$= 265 + 39 = 304 \text{ years}$$

$$\therefore \text{Required average} = \frac{304}{8}$$

$$= 38 \text{ years}$$

19. (3) Total weight of  $(A + B + C)$

$$= 84 \times 3 = 252 \text{ kg.}$$

Total weight of  $(A + B + C + D)$

$$= 4 \times 80 = 320 \text{ kg.}$$

$$\therefore \text{Weight of D} = 320 - 252 = 68 \text{ kg.}$$

$$\therefore \text{Weight of E} = 68 + 3 = 71 \text{ kg.}$$

$$\therefore (B + C + D + E)'s \text{ weight}$$

$$= 79 \times 4 = 316 \text{ kg.}$$

Now,  $(A+B+C+D) - (B+C+D+E)$

$$= 320 - 316 = 4 \text{ kg.}$$

$$\Rightarrow A - E = 4 \text{ kg}$$

$$\Rightarrow A = 4 + E = 4 + 71 = 75 \text{ kg.}$$

Hence, weight of A = 75 kg