STAFF SELECTION COMMISSION – Solved Papers
AVERAGE (SOME IMPORTANT EXERCISES)

1. 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

Ans : 1

Sum total of five results

= 5 x 46 = 230

Sum total of first four results

= 4 x 45 = 180

So, fifth result

= 230 – 180 = 50.

2. Find the average of first five multiples of 3.

(1) 11   (2) 9

(3) 13   (4) 7

Ans : 2

Average

$$= \frac{3+6+9+12+15}{5} = \frac{45}{5} = 9$$

3. Out of three numbers, the first is twice the second and is half of the third. If the average of three number is 56, find the largest number.

(1) 50   (2) 48

(3) 96   (4) 75

Ans : 3

Let the first number be x.

Second number $= \frac{x}{2}$

Third number $= 2x$

$$\text{Average} = \frac{x + \frac{x}{2} + 2x}{3}$$

$$= \frac{7}{6}x$$

Given : $= \frac{7}{6}x = 56 \Rightarrow x = 48$

So, the three numbers are 48, 24 and 96.

4. 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 numbers?

(1) 50   (2) 46

(3) 48   (4) 54

Ans : 4

Let the third number be x

Second number $= 2x$

First number $= 4x$

Average

$$= \frac{x + 2x + 4x}{3} = \frac{7x}{3}$$

Given : $\frac{7x}{3} = 42$

or, $x = 18$

The smallest number $= x = 18$

The largest number $= 4x = 72$

Difference $= 72 – 18 = 54$.

5. 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

Ans : 1

Let the ages of three boys be 3x, 5x, and 7x

Average age

$$= \frac{3x + 5x + 7x}{3} = 5x$$

and, $5x = 15$

$x = 3$ years

The age of the youngest boy

$= 3x = 9$ years

6. 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

Ans : 2

Each successive odd number exceeds its predecessor by 2.

a + b + c + d + e = a + (a + 2) + (a + 4) + (a + 6) + (a + 8)

= 5a + 20 = 5 (a + 4)

$$\text{Average} = \frac{5(a+4)}{5} = a + 4$$

7. 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

Ans : 3

Total height of the whole class

$= (30 \times 160) + (40 - 30) \times 156$

$= 6360$ cms

Average height of the whole class

$= \dfrac{6360}{40} = 159$ cms.

8. 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

Ans : 4

Sum total of 50 numbers

$= 38 \times 50 = 1900$

Sum total of remaining 48 numbers

$= 1900 - (45 + 55) = 1800$

and their average $= \dfrac{1800}{48}$

$= 37.5$

9. 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

Ans : 2

Sum of 25 results = Average x their number

$= 18 \times 25 = 450$

Similarly,

Sum of 1st twelve results

$= 12 \times 14 = 168$

and sum of last twelve results

$= 12 \times 17 = 204$

∴ Thirteenth result

$= 450 - 168 - 204 = 78$

10. 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

Ans : 1

Since 36 was misread as 26, i.e., 26 was counted while calculating average.

Incorrect average = 15

∴ Incorrect sum of ten numbers $= 10 \times 15 = 150$

∴ Correct sum total

$= 150 + 36 - 26 = 160$

∴ Correct average $= \dfrac{160}{10} = 16$

11. 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

Ans : 3

Sum of all four numbers

$= 3 \times 15 + 19 = 64$

Sum of last three numbers

$= 3 \times 16 = 48$

So, first number = 64 – 48 = 16

12. 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

Ans : 1

Seventh observation = Sum of 7 observation – Sum total of 6 observations

$= (7 \times 11) - (6 \times 12) = 77 - 72$

$= 5$

13. The average age of 30 children in a class is 9 years. If the teachers age be included, the average age becomes 10 years. Find the teacher's age and a teacher = 10 years

(1) 42 years   (2) 36 years

(3) 38 years   (4) 40 years

Ans : 4

Average age of 30 children

$= 9$ years

Total age of 30 children

$= 9 \times 30 = 270$ years

Average age of 30 children and a teacher = 10 years

∴ Sum of age of 31 persons (30 children + 1 teacher)

$= 31 \times 10 = 310$ years

∴ Teacher's age

$= 310 - 270 = 40$ years.

14. The average weight of a class of 35 students is 47.5kg. If the weight of the teacher is included, the average weight is increased by 500 gm. Find the weight of teacher.

(1) 65.5 kg   (2) 63.5 kg

(3) 64.5 kg   (4) 66.5 kg

Ans : 1

Average weight of 35 students = 47.5 kg.

Total weight of 35 students

= 47.5 x 35 = 1662.5kg.

∴ Average weight of 35 students + 1 teacher

= 47.5 + 0.5 = 48 kg.

∴ Total weight of 36 persons

= 48 x 36 = 1728 kg,

∴ Weight of teacher

= 1728 – 1662.5 = 65.5 kg

15. 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

Ans : 2

Sum of eight numbers

= 8 x 21 = 168

Now, each of the numbers is multiplied by 8.

∴ Sum of new eight numbers

= 168 x 8 = 1344

∴ Average of new set of numbers

$= \dfrac{1344}{8} = 168$

16. 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

Ans : 3

Let the height of A, B, C be x cm, x cm and $(x – 2)$ cm respectively.

Now, sum of heights of 40 students = 163 x 40 = 6520 cm

Sum of heights of 37 students excluding A, B and C

= 162 x 37 = 5994 cm.

∴ Sum of heights of A, B and C

= (6520 – 5994) = 526 cm

$\Rightarrow x + x + x - 2 = 526$

$\Rightarrow 3x = 526 + 2 = 528$

$\Rightarrow x = \dfrac{528}{3} = 176\,cm$

∴ Height of A = 176 cm

17. 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

Ans : 1

Sum of ages of 8 members

$= 8 \times 40 = 320\,years$

After person of age 55 years retires,

Sum of ages of 7 persons

= 320 – 55 = 265 years

Sum of ages of 8 persons when a man of age 39 years joins it = 265 + 39 = 304 years

∴ Required average

$= \dfrac{304}{8} = 38$ years

18. 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

Ans : 3

Total weight of (A + B + C)

= 84 x 3 = 252 kg

Total weight of

(A + B + C + D)

= 4 x 80 = 320 kg.

∴ Weight of E = 68 + 3 = 71kg.

∴ (B + C+ D + E)'s weight

= 79 x 4 = 316 kg.

Now, (A + B + C + D) – (B + C + D + E)

= 320 – 316 = 4 kg

∴ A – E = 4 kg

$\Rightarrow$ A = 4 + E = 4 + 71 = 75 kg.

Hence, weight of A = 75 kg.