Answer & Solutions

Level-I

1. **(c)** Age of the class teacher = 25 × 16 – 24 × 15
= 400 – 360 = 40 yrs.

2. **(c)** Age of the teacher = (37 × 15 – 36 × 14) years
= 51 years.

3. **(b)** Required average marks

$$= \frac{40\times 50+35\times 60+45\times 55+42\times 45}{40+35+45+42}$$

$$= \frac{2000+2100+2475+1890}{162} = \frac{8464.9997}{162}$$

= 52.25

4. **(b)** Sum of the remaining two numbers
= (3.95 × 6) – [(3.4 × 2) + (3.85 × 2)]
= 23.70 – (6.8 + 7.7) = 23.70 – 14.5 = 9.20

$\therefore$ Required average = $\left(\frac{9.2}{2}\right) = 4.6.$

5. **(b)** Check as follows,

$$\frac{1+2+3+4+5}{5} = 3$$

$$\frac{1+2+3+4+5+6+7}{7} = 4$$

6. **(a)** The middle number = Sum of the first six + Sum of the the last six – Sum of all the 11
= 6 × 10.5 + 6 × 10.5 – 11 × 10.9
= 63 + 68.4 – 119.9
= 11.5

7. **(d)** Temperature on the fourth day
= 40.2 × 4 + 41.3 × 4 – 40.6 × 7
= 160.8 + 165.2 – 284.2 = 41.8°C

8. **(b)** Recognise that the journey by bus and that by cycle are of equal distance. Hence, we can use the short cut illustrated earlier to solve this part of the problem.
Using the process explained above, we get average speed of the second half of the journey as
10 + 1 × 5 = 15 kmph
Then we employ the same technique for the first part and get 15 + 1 × 9 = 24 kmph

9. **(d)** His total score is 93 + 78 + 177 = 348 out of 450% score = 77.33.

10. **(d)** $80 = \frac{2.x.40}{40+x}$

$40 + x = x$
Hence, not possible

11. **(b)** Sum of ages of Mr. and Mrs. Sinha in 1972 = 46 years
Sum of age of their family in 1976 = 19 × 3 = 57 years
Sum of ages of Mr. and Mrs. Sinha in 1976 = (46 + 8) years
= 54 years
$\therefore$ Age of Vicky in 1980 = 57 – 54 + 4 = 7 years.

12. **(d)** Since the month begins with Sunday, so there will be five Sundays in the month

$\therefore$ Required average $= \left(\frac{510\times 5+240\times 25}{30}\right)$

$$= \frac{8550}{30} = 285$$

13. **(a)** Corrected mean $= \frac{150\times 30-135+165}{30}$

$$= \frac{4500-135+165}{30} = \frac{4530}{30} = 151$$

14. **(a)** Sum of 10 numbers = 402
Corrected sum of 10 numbers
= 402 – 13 + 31 – 18 = 402

Hence, correct average $= \frac{402}{10} = 40.2$

15. **(c)** Find out the number of innings in each year. Then the answer will be given by:

$\frac{\text{Total runs in 4 years}}{\text{Total innings in 4 years}}$ (4270/119 = 35.88)

16. **(a)** Let the total no. of workers be x.
Now, 8000 x = 7 × 12000 + (x – 7) × 6000

$\Rightarrow\ x = \frac{42000}{2000} = 21$

17. **(b)** Let the number of officers be x.
Number of workers = 400 – x
$\Rightarrow$ 10000 × x + 2000(400 – x) = 3000(400)
$\Rightarrow$ 10000x + 800000 – 2000x = 12,00,000
$\Rightarrow$ 4x = 600 – 400 = 200 $\Rightarrow$ x = 50
$\therefore$ Number of officers = 50

18. **(c)** Let the third number be x. Then, second number = 2x. First number = 4x.

$\therefore\ \frac{1}{x}+\frac{1}{2x}+\frac{1}{4x} = \left(\frac{7}{72}\times 3\right)$ or $\frac{7}{4x} = \frac{7}{24}$ or $4x = 24$

or x = 6
So, the numbers are 24, 12 and 6.

19. **(d)** For 150 coins to be of a value of ₹150, using only 25 paise, 50 paise and ₹ 1 coins, we cannot have any coins lower than the value of ₹ 1. Thus, the number of 50 paise coins would be 0. Option (d) is correct.

20. **(c)** Let the initial number of persons be x. Then, $16x + 20 \times 15 = 15.5\,(x + 20) \Leftrightarrow 0.5x = 10$ $\Leftrightarrow x = 20$.

21. **(d)** The average weight per ball is asked. Hence the bag does not have to be counted as the 48th item.

22. **(c)** $400 \times 7 = (300 \times 3) + (250 \times 2) + (n \times 2) \Rightarrow 700$.

23. **(c)** Find the total distance covered in each segment of 10 minutes. You will get total distance = 46 kilometers in 50 mins.

$$\therefore \text{ Average speed} = \frac{46 \times 60}{50} = 55.2\,\text{kmph}$$

24. **(a)** $100 \to 130 \to 182$. Hence, $82/2 = 41$.

25. **(a)** Put $x = 100$ to get the weight of the containers. Use these weights of find average weight as $2600/4 = 650$.

26. **(c)** $(14 \times 27.75 - 2\ 0 + 42\ )/12 = 25.375$

27. **(d)** The number of pass candidates are $2 + 6 + 18 + 40 = 66$ out of a total of 100. Hence, 66%

28. **(b)** Put $x = 10$ in the given equations and find the average of the resultant values.

29. **(c)** $nz - x + x^1 = nz^1$ Simplify to get option (c) correct.

30. **(b)** $251.25*4 + 277.52 * 5 + 760 = 3152.6$

31. **(d)** Let the height of four students be 150, 160, 170, 180 cm then

$$A = \frac{150+160+170+180}{4} = \frac{660}{4} = 165\text{cm}$$

$$B = \frac{\frac{150+160}{2} + \frac{160+170}{2} + \frac{170+180}{2} + \frac{150+180}{2} + \frac{150+170}{2} + \frac{160+180}{2}}{6}$$

$$= \frac{155+165+175+165+160+170}{6} = \frac{990}{6} = 175\text{cm}$$

$$= \frac{670}{4} = 167.5$$

Similarly, $C = 167.5$

Now going through the opitons.

32. **(d)** We can get the sum 666 in two ways:

$1 + 2 + 3 + 4 + 567 + 89 = 666$

or $123 + 456 + 78 + 9 = 666$

So, average cannot be uniquely determined.

33. **(e)** Required average $= \frac{59+84+44+98+30+40+58}{7} = 59$

34. **(b)** Let the five no. be x_1, x_2, x_3, x_4, x_5.

Average of 5 numbers = 61

$$\frac{x_1 + x_2 + x_3 + x_4 + x_5}{5} = 61$$

$$x_1 + x_2 + x_3 + x_4 + x_5 = 305$$

Now, $\frac{x_1 + x_3}{2} = 69$

$x_1 + x_3 = 138$

$\frac{x_2 + x_4}{2} = 69$

$x_2 + x_4 = 138$

Now, $x_1 + x_3 + x_2 + x_4 + x_5 = 305$

$138 + 138 + x_5 = 305$

$x_5 = 305 - 276$

$x_5 = 29$

35. **(d)** Average weight of 19 men = 74 kgs

Total weight of 19 men = 74 × 19 = 1406 kgs

Average weight of 38 women = 63

Total weight of 38 women = 38 × 63 = 2394

Average weight of men and women together

$$= \frac{2394 + 1406}{38 + 19}$$

$$= \frac{3800}{57} = 66.66 \approx 67 \text{ kgs.}$$

36. **(d)** Let S be the sum of ages of 60 boys

Then, $12 = \frac{S}{60}$ ... (1)

$$\text{New average } A = \frac{S - 14 + 12.5}{60} = \frac{S}{60} - \frac{105}{60}$$

$$= 12 - 0.025 = 11.975$$

37. **(c)** Average $= \frac{70 + *7 + 5*}{3}$

$$\Rightarrow 57 = \frac{70 + *7 + 5*}{3}$$

$$\Rightarrow 171 - 70 = *7 + 5*$$

$$\Rightarrow *7 + 5* = 101$$

Then, the sum of these two numbers should be equal to 101.

Therefore by looking options * must be 4.

38. **(c)** Present age of 8 members

= (30 × 8 + 3 × 8) = 264 years

Present age of 8 members and one child

= (30 × 9) = 270 years

∴ Child's age = (270 – 264) = 6 years

39. (b) Lowest score = x
Highest score = $x + 100$
$\therefore 28 \times 38 + x + x + 100 = 30 \times 40$
$\Rightarrow 1064 + 2x + 100 = 1200$
$\Rightarrow 2x = 1200 - 1164 = 36$
$\Rightarrow x = 18$

40. (a) Sum of 20 numbers = $20 \times 35 = 700$
Sum of 20 numbers when 61 is replace by 16
$\Rightarrow 700 - 61 + 16 = 655$

Correct average of 20 numbers = $\frac{655}{20} = 32.75$

41. (b) Average height = $\frac{6\times(1.15)+8\times(1.10)+6(1.12)}{20}$

$\Rightarrow \frac{22.42}{20} = 1.121$ or 1m 12.1cm

42. (c) First five prime numbers are 2, 3, 5, 7, 11

Average = $\frac{2+3+5+7+11}{5} = \frac{28}{5} = 5.6$

43. (b) Let the average of batsman after 11th innings = A

$$\frac{\text{Total score made by batsman at the end of 11th innings}}{11} = A$$

$\therefore$ Total score after 11th innings = 11 A

Now, $\frac{\text{Total score after 11th innings} + \text{score made in 12th innings}}{12} = A + 2$

$\Rightarrow 11A + 63 = (A + 2) \times 12$
$\Rightarrow 11A - 12A = 24 - 63$
$\Rightarrow A = 39$
12th innings average = 39 + 2 = 41

44. (a) Let the consecutive even numbers are 2n, 2n + 2, 2n + 4 and 2n + 6

Average = $\frac{2n+2n+2+2n+4+2n+6}{4}$

$8n + 12 = 4 \times 9 \Rightarrow n = 3$
Hence, the numbers are 6, 8, 10 and 12. Largest among them is 12.

45. (d) Short-cut method:
Weight of new crewmen
= Replace man weight + [No. of crew men × increased average]

$= 55 + 12 \times \frac{1}{3} = 59$ kg

46. (b) Sum of 30 numbers = 30×40 = 1200
Sum of 40 numbers = 40 × 30 = 1200

Average of 70 numbers = $\frac{1200+1200}{70} = \frac{2400}{70} = 34\frac{2}{7}$

47. (b) Let total number of workers be n
total salary of all workers = 8000 n
total salary of 7 technicians = 7 × 12000 = 84,000
total salary of remaining workers = (n – 7) × 6000
84000 + (n – 7) × 6000 = 8000 n
84 + 6n – 42 = 8n
42 = 2n
n = 21

48. (c) Let total age of family be S years
3 years ago, total age = S – 3 × 5 = S – 15

$\frac{S-15}{5} = 17$

S = 17 × 5 + 15 = 100
Let present age of baby be x years

$\frac{S+x}{6} = 17$

100 + x = 17 × 6
x = 102 – 100 = 2 years

49. (c) Average = $\frac{\text{Sum of observation}}{\text{Total no. of observation}}$

Required average

$= \frac{432+623+209+378+908+168}{6}$

$= \frac{2718}{6} = 453$

50. (e) Third number
= 5 × 34.4 – 2 × 46.5 – 2 × 18
= 172 – 93 – 36 = 43

51. (a) Required average

$= \frac{78+69+54+21+94+48+77}{7}$

$= \frac{441}{7} = 63$

52. (c) Let M_1, M_2, M_3, ... M_{13} are 13 matches played by cricket players.

$$\frac{M_1+M_2+M_3+M_4+M_5+M_6+M_7+M_8+M_9+M_{10}+M_{11}+M_{12}+M_{13}}{13} = 42 \quad ....(1)$$

$$\frac{M_1+M_2+M_3+M_4+M_5}{5} = 54 \quad ...(2)$$

From eqns. (1) and (2)
$270 + M_6 + M_7 + M_8 + M_9 + M_{10} + M_{11} + M_{12} + M_{13} = 42 \times 13 = 546$

or, $\frac{M_6+M_7+M_8+M_9+M_{10}+M_{11}+M_{12}+M_{13}}{8}$

$= \frac{276}{8} = 34.5$