

## AVERAGE [ANSWER]

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1. (c) Average monthly income in that month =  $\pounds (9000 - 900) = \boxed{\pounds 8100}$

2. (d) Average chocolates eaten on Thursday and Friday =  $\left(\frac{18+16}{2}\right) = 17$

Let, the number of chocolates eaten on Wednesday be  $x$ .

$$\therefore \frac{15+11+x}{3} = 17 \Rightarrow x = (51-26) = \boxed{25}$$

3. (b) Let the average of the batsman before the 53<sup>rd</sup> innings be  $x$ .

$$\therefore 52x = 53(x+1) - 126 \Rightarrow x = \boxed{73}$$

4. (b) Required average earning =  $\frac{(12 \times 11000) - (10 \times 8500)}{2}$

$$= \frac{(13,2000 - 85000)}{2} = \boxed{\pounds 23,500}$$

5. (d) Let the cost of the third pen be  $\pounds x$ .

$$\therefore \text{Cost of the second pen} = \left(x + \frac{x}{3}\right) = \pounds \frac{4x}{3}$$

$$\text{Now, the cost of the first pen} = \left(\frac{4x}{3} + 50\% \text{ of } \frac{4x}{3}\right) = \pounds 2x$$

$$\text{Average of the first two pens} = \frac{1}{2} \left(2x + \frac{4x}{3}\right)$$

$$\text{Average of the second and third pens} = \frac{1}{2} \left(\frac{4x}{3} + x\right)$$

$\therefore$  According to the question:

$$\frac{1}{2} \left[ \frac{4x}{3} + 2x - \frac{4x}{3} - x \right] = 15 \Rightarrow x = 30$$

$$\text{Cost of the costliest pen} = 2x = (2 \times 30) = \boxed{\pounds 60}$$

6. (b) Number of goals scored in the first 5 matches =  $\{(6 \times 2) - 3\} = 9$

$$\therefore \text{Total number of goals scored in 11 matches} = \{9 + (6 \times 4)\} = 33$$

$$\therefore \text{Average number of goals scored} = \left(\frac{33}{11}\right) = \boxed{3}$$



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7. (a) The olderman increased the total age of the group by  $(58 - 34) = 24$  years. Since average age increased by 2 years; therefore the number of members in the group  $= \frac{24}{2} = 12$

8. (a) Since the teacher increases the average by 1 year; he contributes in 31 years more than the average to the group. Hence; the age of the teacher is;

$$[3(30+1) \times 1] + 16 = 17 \text{ years}$$

9. (c) Let the number of wickets taken before the last match be  $x$ .

$\therefore$  According to the question:  $\frac{(1200 + 149)}{x} - \frac{1200}{x} = 1$

Now, putting the option (c); We can see that L.H.S is equals to R.H.S. Then; the required answer is  $60$

10. (b) The total age of the family should have increased by 25 years or  $(5 \times 5)$  years. Since it did not happen; it implies that the member who has come in is 25 years younger than the member who left the group.

$\therefore$  The age of the daughter-in-law  $= (48 - 25) = 23 \text{ years}$

11. (c) Let the average be  $\text{₹} x$ .

$\therefore$  According to the question:

$$\frac{(15 \times 80) + \{(x + 75) \times 1\}}{16} = x$$

$$\Rightarrow 1275 + x = 16x$$

$$\Rightarrow x = 85$$

$\therefore$  Total bill  $= (16 \times 85) = \text{₹} 1360$



12. (b) Total marks of all the students =  $(40 \times 85) = 3400$   
Total marks of the remaining 38 students =  $(38 \times 84) = 3192$   
 $\therefore$  Sum of the highest and the lowest marks =  $(3400 - 3192)$   
 $= 208$

Now; difference between the two marks be 108.  
 $\therefore$  Highest marks:  $\left(\frac{208 + 108}{2}\right) = \boxed{158}$

13. (c) Since  $\frac{3}{7}$ th of these numbers is increased by 4; this increases the overall average of the  $n$  numbers by  $\rightarrow (4 \times \frac{3}{7}) = 3$ .  
 So the average becomes  $\rightarrow (32 + 3) = 35$ .

Now; the average of the remaining  $\frac{4}{7}$ th decreases by 6; this decreases the overall average of the  $n$  numbers by  $\rightarrow (6 \times \frac{4}{7}) = 1.5$ .  
 So, the new average becomes  $\rightarrow (35 - 1.5) = \boxed{33.5}$

14. (a) Weight of the papayas left with vendor =  $\{(12 \times 2) - (1 \times 9)\} = 19 \text{ kg}$   
 $\therefore$  Required average weight =  $\left(\frac{19}{10}\right) = \boxed{1.9 \text{ kg}}$

15. (b) Required average =  $\frac{(64 \times 88) - (10 \times 142)}{54} = \frac{(5632 - 1420)}{54}$   
 $= \left(\frac{4212}{54}\right) = \boxed{78}$

16. (b) The two new students have added  $\rightarrow \{(19 + 21) - (16 + 18)\} = 6$  years to the total age of the class.  
 Since; the average increased by 3 months. i.e;  $\frac{1}{4}$ th of a year; therefore the number of students =  $\left(\frac{6}{\frac{1}{4}}\right) = \boxed{24}$



(11)

17. (d) Required average:  $\frac{50(1+2+3+\dots+10)}{10}$   
 $= \left( \frac{50 \times 10 \times 11}{10 \times 2} \right) = \boxed{275}$

18. (d) Let the amount spent by each girl be ₹  $a$ .

∴ Amount spent by each boy = ₹  $(a+20)$

$$\therefore 6(a+a+20) = 1380$$

$$\Rightarrow 3(a+a+20) = 690$$

$$\therefore \text{Required average amount} = \frac{1380 - 3(a+a+20)}{6}$$

$$= \frac{1380 - 690}{6} = \boxed{\text{₹ } 115}$$

17. (b) Let the average age of the class be  $A$  years. Let the ages of the replaced students be  $2x$  and  $x$  years. Total age of the students who are not replaced =  $(48A - 3x)$  years.

∴ According to the question:

$$(48A - 3x) + (16 + 11) = 48 \left( A + \frac{1.5}{12} \right)$$

$$\Rightarrow 48A - 3x + 27 = 48A + 6$$

$$\Rightarrow 3x = 21 \Rightarrow \boxed{x = 7}$$

20. (d) The average temperature for Monday and Sunday is the temperature on Thursday.

∴ The temperatures on the 7 days are as follows.

Mon	Tue	Wed	Thu	Fri	Sat	Sun
34	35	36	37	38	39	40

∴ The average temperature for Mon; Tue; Wed is  $\boxed{35^\circ\text{C}}$



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21. (c) The man buys 2 dozens at ₹ 24 per dozen and  $x$  dozens at ₹ 24 per dozen.

$$\text{Now; } 24x = 120 \Rightarrow x = 5$$

The total number of apples with the man is  $\rightarrow (2+5)$  dozens

$$\text{or } (7 \times 12) = \boxed{84}$$

$$22. (d) \frac{30N + (5 \times 12)}{(N+5)} = \frac{30N - (5 \times 36)}{(N-5)}$$

Now; substitute the option in the  given question;

Only 10 satisfied this.

$\therefore$  Required answer is  $\boxed{10}$

$$23. (d) \text{ The required average is } \rightarrow \frac{(325 + 300 + 350)}{3} = \boxed{325}$$

24. There is no change in the salary of the 97 workers.

For the assistant managers; there is an increase of ₹ 500.

For the senior manager; there is an increase of ₹ 500.

$$\text{The net } \blacktriangleright \text{ increase} = \frac{1000}{100} = ₹ 10$$

$\therefore$  The new average is ₹ (1500 + 10) or  $\boxed{₹ 1510}$



## AVERAGE [ANSWERS] <13>

25. (c) Total age of the  $x$  persons initially =  $60x$  years.

Total age of  $x$  persons finally  $\Rightarrow$   
 $= 60x - 52 - 68 + y + 72$

$$= 60 + y - 48$$

$\therefore$  According to question:

$$60 + y - 48 = 61x \Rightarrow y - 48 = x$$

As  $59 < y < 64$ ; then  $6 < x < 16$

As  $x$  is a perfect square; then  $x = 9$  and  $y = 57$