## Mathematics NTSE - Foundation Average

## Average

(i) Average - 
$$\left(\frac{\text{Sum of observation}}{\text{Number of observation}}\right)$$

(ii) Suppose aman covers a certain distance at x kmph and an equal distance at y kmph. Then the

average speed during the whole journey is  $\left(\frac{2x}{yx+y}\right)$ 

kmph.

- **EX.1** Find the average of all prime numbers between 30 and 50.
- **Sol** There are five prime number between 30 and 50. They are 31,37,41,43, and47
  - ... Required average =  $\left(\frac{31+37+41+43+47}{5}\right)$ =  $\frac{199}{5} = 39.8$

EX.2 Find the average of first 20 multiples of 7.

**Sol.** Required average  $=\frac{7(1+2+3...+20)}{20}$ 

$$= \left(\frac{7 \times 20 \times 21}{20 \times}\right) = \left(\frac{147}{2}\right) = 735$$

- **Ex.3** The average of 25 results is 18 average of first twelve of them is 14 and of last twelve is 17. Find the thirteenth result.
- **Sol.** Clearly, thirteenth result= (sum of 25 results)- (sum of 24 results)

 $= [(18 \times 25) - (14 \times 12) + (17 \times 12)]$ 

= 450-(168+204) = 450 - 372 = 78.

- **Ex.4** The average age of a class of 39 students is 15 years. If the age of the teacher beincluede, then the teacher be Included, then the average increased by 3 months. Find the age of the teacher.
- **Sol.** Total age of 39 persons = (39×15) years = 585 years.

Average age of 40 persons= 15 years 3 months = 61

 $\frac{61}{4}$  years.

Total age of teacher =  $\left(\frac{61}{4} \times 40\right)$  years =610 years.

- $\therefore$  Age of the teacher = (610-585) years =25 years.
- **EX.5** A batsman makes a score of 87 runs in the 17th inning and thus increases his average by 3. Find his average after 17 th inning.
- **Sol.** Let the average after 17 thinning =x. Then, average after 16<sup>th</sup> inning =(x-3)
  - $\therefore$  16(x-3) + 87 = 17x or x=(87-48) = 39.

- **Ex.6** A pupil's marks were wrongly entered as 83 instead of 6.3 Due to that the average marks for the class increased by half. Find he number of pupils in class.
- Sol. Let there be x pupils in the class.

Total increase in marks 
$$=\left(x \times \frac{1}{2}\right) = \frac{x}{2}$$
  
 $\therefore \qquad \frac{x}{2} = (83 - 63) \Rightarrow \frac{x}{2} = 20 \Rightarrow x = 40$ 

## EXERCISE

- The average of 2, 7, 6 and x is 5and the average of 18, 1,6,x and y is 10.What is the value of y ?

   (A) 5
   (B) 10
   (C) 20
   (D) 30
- 2. The average of first 50 natural numbers is: (A) 12.2 (B) 21.15 (C) 25 (D) 25.5
- 3. The average of four consecutive even number '27. Find the largest of these numbers
  (A) 50
  (B) 40
  (C) 20
  (D) 30
- 4. The average of ten numbers is 7. If each number is multiplied by 1, then the average of the new set of numbers is:
  - (A) 7 (B) 19 (C) 82 (D) 84
- 5. A student was sdkrf yo find the arithmetic's mean of the numbers 3,11, 7,9,15,13,8,19,17,21,14 and x, He found the mean to be 12.What should be the number in place of x ?
  (A) 3
  (B) 7
  - (C) 17 (D) 31
- 6. The average of 11 results s 60. If the average of first six results is 58 and that of the last six is 63. Find the sixth result.

(A) 66	(B) 70
(C) 78	(D) 85

7. The average weight of A, B, C is 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43kg. Find the weight of B.
(A) 35
(B) 42

(C) 31 (D) 30

8. The average weight of 10 oarsmen in a boat is increased by 1.8 kg when one of the crew member, whose weighs 53 kg is replaced by a new man. Find the weight of the new man.

(A) 75	(B) 71
(C) 68	(D) 80

- 9. Nine persons went to a hotel for taking their meals. Eight of the spent Rs. 12 each on their meals and the ninth spent Rs.8 more than the average expenditure of all the nine. What was the total money spent by them? (A) 115 (B) 117
  - (C) 120 (D) 128
- 10. There were 35 students in a hostel. Due to the admission of 7 new student the expenses of the mess were increased by Rs.42 per day while the average expenditure Per bead diminished by Re 1. What was the original expenditure of the mess? (B) 410 (A) 425 (C) 420 (D) 430
- 11. A library has an average of 510 visitors on Sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is (A) 250 (B) 276 (C) 280 (D) 430
- 12. 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 (B) 170 runs (A) 165 runs

(C) 172 runs

(D) 174 runs

- 13. The average of runs of a cricket player of 10 innings was 32. How many runs must in his next innings so as to increase his average of runs by 4? (B) 4 (A) 2
  - (C) 70 (D) 76
- 14. The average age of 36 students in a group is 14 years. When teacher's age is included to it, the average increases by one. What is the teacher's age in years? (A) 31 (B) 36 (C) 51

(D) can't be determined

- 15. The average 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
  - (A) 19 years (B) 23 years (C) 28.5 years (D) 29.3 years
- 16. Ten years ago, average of the ages of a men and his wife was 25 years. Today the average age of these two and their son taken together is again 25 years. What is the age (in years) of the son today?

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(A) 2	(B) 5
(C) 8	(D) 10

- 17. A batsman, by scoring 68 runs in his 20th inning improves his average by 2 runs, His average for all 20 innings is:
  - (A) 28 (B) 30 (C) 32 (D) 34

## ANSWER – KEY

AVERAGE										
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	С	D	D	D	В	Α	С	В	В	С
Que.	11	12	13	14	15	16	17			
Ans.	D	D	D	С	Α	В	В			