**Chapter-8**

**Average**

**What is Average?**  
The result obtained by adding several quantities together and then dividing this total by the number of quantities is called Average

**Average: =**

**Average Speed=** if someonecovers a certain distance at X Kmph and an equal distance at Y Kmph. Then,  
the average speed during the whole journey is =Kmph.

**Example:**  
The average of five numbers is 29. If one number is excluding the average becomes 27. What is the exclude number?

**Answer:**  
let the exclude number is  
= (29 x 5) – (27 x 4)   
= 145 – 108  
= 37.

**Example:**  
There are two sections X and Y of a College, consisting of 36 and 44 students respectively. If the average weight of section X is 40Kg and that of section Y is 35Kg . Find the average weight of the whole College (in Kg)?

**Answer:**

**Step 1:** At first the total (X + Y) college students are (36 + 44) = 80.

**Step 2:** college X total student weight and college Y total student weight is (36 x 40 + 44 x 35) = 2980  
**Average weight of the whole college is = 2980 / 80 = 37.25.**

**Example:** The average of a non-zero number and its square is 5 times the number. The number is?

**Answer:**  Let the number be x. Then,  
x + x2 / 2 = 5x  
x2 -9x = 0  
x(x – 9) = 0 or x = 0 or x = 9  
**So the number is 9.**

**Example:**  
The average marks acquired by 140 students in a final examination is 36.If the average marks of failed students is 18 and the passed average students is 30. What is the no. of passed student in examination.

**Answer:**  
Number of passed students are = Total students(total average – failed average) / passed average – failed average

**Step 1:** = 140 ( 36 – 18 ) / ( 30 – 18 )

**Step 2:** = 210

**Example:**  
If average of two numbers is 77.5 and a number is 5.5 less than the average, then what is the second number?

**Answer:**  
77.5 x 2 = 155  
77.5 – 5.5 = 72  
second number is ( 155 – 72 ) = 83

**Example:**  
The average run of a cricket player of 8 innings was 34. How many runs must he make in his next innings so as to increase his average of runs by 6?  
**Answer:**  
**Step 1:** Average run of a player in next innings is 9 = (34 + 6) = 40 runs.

**Step 2:** Required run for 9 innings is (40 x 9) = 360 runs and 8 innings is (34 x 8) = 272 runs.  
**So, required number of run is = (360 – 272) = 88 runs.**

**Example:** In a shop out of 9 persons, 8 persons spent Rs. 30 each for their shopping. The ninth one person spent Rs. 20 more than the average expenditure of all the nine. The total money spent by all of them.  
**Answer:**  
Let the average money spent be Rs. x, Then  
9x = 8 x 30 + (x + 20 )  
9x = x + 260  
8x = 260  
x =32.50.  
**Total money spent by = 9x = 9 x 32.50 = 292.50.**

**Example:**  
The average age of 15 boys is 18 years in the Math’s class and that of 13 girls is ages 15 years. What is the average age of total math’s class?

**Answer:**  
In a math’s class 15 boys ages 18 years = ( 15 x 18 ) = 270  
In a math’s class 13 girls ages 15 years = ( 13 x 15 ) = 195  
**So average age of total math’s class is =  270 + 195 / 28 = 465 / 28 = 16.607.**

**Example:** Four years ago, the average age of Rajesh and Suresh was 16 years. With Dipika joining them, the average age becomes 24 years. How old Dipikanow?

**Answer:**  
Present age of (Ramesh + Suresh) = ( 16 x 2 + 4 x 2 ) = 40 years.  
Present age of (Ramesh + Suresh + Dipika) = (24 x 3) = 72.  
**Dipika present age is (72 – 40) = 32.**

**Example:** The average monthly income of **A and B is Rs.6040.** The monthly average income of **B and C is Rs.7500** and monthly average income of**A and C is Rs. 6500.**Find the**income of A in a monthly income**?  
**Answer:**  
**Step 1:** here is ABC given respectively monthly income, hence we need to find both income.  
(A + B) = (6040 x 2) = **12080,** (B + C) = (7500 x 2) = **15000,** (C + A) = (6500 x 2) = **13000**

**Step 2:**If we add 3 income 2( A + B + C ) = 2 x ( 12080 + 15000 + 13000 ) = **40080**or A + B + C = 40080 / 2 =**20040.**  
**Step 3:** So we get the income of A Subtract income of (A + B + C) – (B + C) = (20040 – 15000) =**5040.5**  
**Example:**  
The average of Five numbers is 62.The average of the second and the third number is 45.The average of the first and the fifth number is 66. What is the fourth number?

**Answer:**  
Average of Five numbers is = 62 x 5 = 310  
Average of second and third number = 45 x 2 = 90  
Average of first and fourth number = 66 x 2 = 132  
( 132 + 90 ) = 222  
The fourth number is ( 310 – 222 ) = 88

**Example:**In a school of class x after replacing an old student by new student, it was found that the average age of eight student of a class x is the same as it was 5 years ago. What is the difference between the ages of the replaced and new student?

**Answer:** Age decreased = (8 x 5) = 40 years.

So the required age difference is = 40 years.