Speed Up Your Calculation (Ganit Bodh Series)-01

Addition

Type:I

Addition of simple integers. Add unit place digits of even number and then unit place digits of odd numbers in a sequence. Definitely this practice will make addition easier and saves time.

For example:

432 + 324 + 433 + 237 + 154 = ?

In the addition of the above integers, if we add in this sequence as 2+4+4+3+7

Reflection: Add even numbers + add odd numbers.

Checking: In the examination, various types of questions are given to test the calculative ability of a candidate.

For example:

Q. Which of the following is correct?

	3347	3457	5642	5792	
A.	2345	B.	2432	C.1244	D. 4214
	3759	3242	3243	3214	
	9451	9133	10229	13310	

In checking the addition, students are generally adding it again, which will waste a lot of time and energy. So what should one do?

You simply add the given numbers row-wise and even it comes more than 9 subtract 9 and then rest add into other numbers. Finally, a remainder comes out between $0 \leq a \leq 8$. Then add the given sum and repeat the process. If the same remainder intotal appear, it means given addition is correct. For example checking first the addition of the given option. We have.

$3347 \Rightarrow 3 + 3 + 4 + 7 \Rightarrow 8$

$2345 \Rightarrow 2 + 3 + 4 + 5 \Rightarrow 5$

$3759 \Rightarrow 3 + 7 + 5 + 9 \Rightarrow 6$

9+4+5+1= Remainder 1.

Or, other method for quick investigation: Cancel all 9s present in given addition and then make pair's of two or more numbers whose sum is exactly 9, which also cancel out. Finally, if remainder in total are same as the remainder in above numbers. Then the sum is correct.

Addition of fraction: We remember that $a\frac{b}{c} = a + \frac{b}{c}$

In addition of fractional integers (i.e. numbers in which there are some integral part as well as some fractional part.)

Type II:

If the numbers have fractional part only, then make sure that denominator of each fraction must be same. For that take L.C.M. of denominators and then numerator by even+odd concepts.

For example:

$$\frac{7}{36}+\frac{1}{12}+\frac{5}{12}+\frac{7}{6}+\frac{8}{9}+\frac{2}{3}=?$$

First of all, be sure that, if denominator of any number is multiple of all denominators, then it is sure, that the no. will be L.C.M. of all denominators. Make sure that all other denominators should be same denominators. For this multiply and divide the fractional numbers. In this question 36 is available, which is multiple of all denominators, like 12, 6, 9, 3 and 36 it self. Hence 36 is L.C.M. Now, to make other fraction whose denominators are 12, 6, 9, 3, multiply their numerators as well as denominators by 3, 6, 4, 12 respectively, as

$$\frac{7}{36}+\frac{1\times3}{12\times3}+\frac{5\times3}{12\times3}+\frac{7\times6}{6\times6}+\frac{8\times4}{9\times4}+\frac{2\times12}{3\times12}.$$

Now, this will get coverted in the form of

$$\frac{7}{36}+\frac{3}{36}+\frac{15}{36}+\frac{42}{36}+\frac{32}{36}+\frac{24}{36}$$

Now, add even + odd concept in numerators, we will find:

$$\frac{7+3+15+42+32+24}{36}=\frac{123}{36}$$

$$=\frac{41}{12}=3\frac{5}{12}$$

Type III:

When addition in value mixed fraction, ie, integral part as well as fractional part as $I_1\frac{N_1}{D_1}+I_2\frac{N_2}{D_2}+.....I_n\frac{N_n}{D_n}$

Then first add all integral parts: $I_1+I_2+.....+I_n$ and then add fractional part as well according to the rule stated above. Let us illustrate this concept with the help of this example as:

$$3\frac{3}{4}+3\frac{1}{4}+5\frac{1}{8}+4\frac{3}{8}+3\frac{5}{8}=?$$

First, add all integral parts as:

$$3+4+3+5+3+\frac{3}{4}+\frac{1}{4}+\frac{1}{8}+\frac{3}{8}+\frac{5}{8}$$

$$=18+\frac{6}{8}+\frac{2}{8}+\frac{1}{8}+\frac{3}{8}+\frac{5}{8}$$

$$=18\frac{17}{8}=18+2+\frac{1}{8}=20\frac{1}{8}\text{ Ans.}$$

Second Method: $3\frac{3}{4}+3\frac{1}{4}+5\frac{1}{8}+4\frac{3}{8}+3\frac{5}{8}$

$$=\frac{15}{4}+\frac{13}{4}+\frac{41}{8}+\frac{35}{8}+\frac{29}{8}$$

Speed Up Your Calculation (Ganit Bodh Series)-01

$$= \frac{30}{8} + \frac{26}{8} + \frac{41}{8} + \frac{35}{8} + \frac{29}{8} \qquad = \frac{30+26+41+35+29}{8}$$

$$= \frac{161}{8} = 20\frac{1}{8}$$

But we suggest you that please don't apply this method it will take more time than previous method.

Subtraction

Type I:

In subtraction, we may also apply even- odd concept. It will save much more time, as 444 – 332 – 231 + 869. The unit place itself can be subtracted as (4 – 2 + 9 – 1) = 10 $\rightarrow$ Put 0 and carry 1 in hand. Hand = 5, therefore, put 5 at tens place, nothing, in hand. Then for hundred place 4 + 8 – 2 – 3 = 7. Hence, finally answer is 750.

Students can practice the subtraction according to this new concept. It will be much quicker than traditional methods. Let us consider one more example as 345+427+561-334

Unit place can be filled up by 5+7+1–4=9
Tens place can be filled up by 4+2+6-4=8
Hundreds place can be filled up by 3+5+4–3=9
Hence required answer is 989.

Type II:

When there is need of helpline: When we subtract the number of corresponding position the digits are negative. Since digits at unit or tens place can not be written negative so make it positive by taking helpline and to make it positive. Add 10 to the digit itself and subtract 1 from the place left to it as:

442+343+421-457-355
Unit place can be filled by 2+3+1-7-5=-6+10=4
Tens place can be filled by 4+4+2-5-5-1=-1+10=9
Hundred place can be filled by 4+3+4-4-3-1=3
Therefore required total is 394

Explanations: Unit place is coming out to be negative i.e. -6. Therefore 10 is added to it to make positive at unit place and subsequently 1 is subtracted from the digits at tens place since sum of digit at tens place are also negative. Hence add 10 to make it positive and subtract 1 from the sum of digits at hundredth place and so on.

To be countinue.....

See tomorrow....