ASSIGNMENT – 1(MATHEMATICS) CLASS – 8

Copy the notes in your maths copy and then do the homework in the same copy.

CHAPTER - 5

PLAYING WITH NUMBERS

Generalized form – A number is said to be in generalized form, if it is expressed as sum of the products of its digits with their respective place values.

Example of 2 digit number – 34, 56, 78 etc.

34 can be written as –

$34 = 30 + 4 = 10 \times 3 + 4$

In general, a 2-digit number ab can be written as

$ab = 10 \times a + b = 10a + b$

Similarly, $ba = 10 \times b + a = 10b + a$

Example of 3 digit number – 456, 789, 967 etc.

456 can be written as –

$456 = 400 + 50 + 6 = 100 \times 4 + 10 \times 5 + 6$

In general, a 3-digit number abc can be written as

$abc = 100 \times a + 10 \times b + c$

Similarly, $bca = 100 \times b + 10 \times c + a$

and $cab = 100 \times c + 10 \times a + b$

So the number ab does not mean a x b

And the number abc does not mean a x b x c

Example 1 – write 287 in generalized form

Solution – 287 = 2 x 100 + 8 x 10 + 7 x 1

= 2 x 100 + 8 x 10 + 7

- Reversing the digits of a 2-digit number
  Let us consider a 2-digit number 37
  Reverse the digit, we get a new number i.e. 73
  Adding new number to the original number, we get
  37 + 73 = 110
  Thus, 110 = 11 x 10, the number is divisible by 11 and also by 10 which is the sum of the digits i.e. 3 + 7 = 10
  Check:-
  Consider any 2-digit number ab i.e. 10a + b
  Reverse the digit ab to get a new number ba i.e. 10b + a
  Adding these numbers, we get
  (10a + b) + (10b + a) = 11a + 11b = 11(a + b)
  Hence, the sum of original number and the number which we obtained by reversing the number is always divisible by 11 and sum of the digits i.e. (a + b)
- Consider another 2-digit number 68
  Reverse the digit to get a new number i.e. 86
  Subtracting the greater number to the smaller one, we get
  86 – 68 = 18
  Thus, the difference 18 = 9 x 2, which is divisible by 9 and also by 2 which is the difference of the digits i.e. 8 – 6 = 2
  Check:-
  Consider any 2-digit number ab (a>b) i.e. 10a + b
  Reverse the digits ab to get a new number ba i.e. 10b + a
  Subtracting larger number to the smaller number, we get

$(10a + b) – (10 b + a) = 9a – 9b = 9(a – b)$

So, it is always divisible by 9 and the difference of the digits i.e. (a-b)

Example 2 – write the quotient when the sum of a 2-digit no. 27 and number obtained by reversing the digits is divided by

(i) 11 (ii) sum of digits

Solution: Given no. = 27

By reversing the given number,

we get a new number = 72

Sum = 27 + 72 = 99 = 11 x 9

(i) if it is divided by 11, quotient is 9

(ii) sum of digits = 2 + 7 = 9

Therefore, when sum 99 is divided by 11, quotient is 9

Example 3 – In two digit number, the unit digit is 3 times the tens digit and sum of the digits is 12. Find the number.

Solution – Let unit's digit = a

Ten's digit = b

$a = 3 b$ ---------- (1)

$a + b = 12$ ---------- (2)

Putting the value of a from equation (1) to equation (2)

$3 b + b = 12$

$4 b = 12$

$b = 3$

put the value of b in equation (1)

a = 3 x 3 = 9

the number = 10b + a = 10 x 3 + 9 = 30 + 9 = 39

Example 4 – the sum of the digits of a 2-digit number is 11. The number obtained on reversing its digits is 27 more than the original number. Find the original number?

Solution – let ten's place = a, unit's place = b

a + b = 11 ---------- (1)

Number = 10a + b

Reversing the number = 10b + a

From condition

10b + a = (10a + b) + 27

10b + a – 10a – b = 27

9b – 9a = 27

9 (b - a) = 27

b – a = 3 ---------- (2)

By elimination method,

b + a = 11

b – a = 3

2b = 14

b = 7

a = 11 – b = 11 – 7 = 4

So, the required number is 10a + b = 10 x 4 + 7 = 40 + 7 = 47

Home work :

Exercise 5.1 question no. 1, 2, 3, 6, 7, 8