



# VIDYA BHAWAN, BALIKA VIDYAPITH

Shakti Utthan Ashram, Lakhisarai-811311(Bihar)

(Affiliated to CBSE up to +2 Level)

CLASS: 8<sup>TH</sup>

DATE: 29-12-2020

SUB.: MATHEMATICS

## Playing with Numbers

### Ex 16.1

**Question 1.** Find the values of the letters in each of the following and give reasons for the steps involved.

$$\begin{array}{r} 1. \quad 3A \\ + 25 \\ \hline B2 \end{array}$$

$$\begin{array}{r} 3. \quad 1A \\ \times A \\ \hline 9A \end{array}$$

$$\begin{array}{r} 5. \quad AB \\ \times 3 \\ \hline CAB \end{array}$$

$$\begin{array}{r} 7. \quad AB \\ \times 6 \\ \hline BBB \end{array}$$

$$\begin{array}{r} 9. \quad 2AB \\ + AB1 \\ \hline B18 \end{array}$$

$$\begin{array}{r} 2. \quad 4A \\ + 98 \\ \hline CB3 \end{array}$$

$$\begin{array}{r} 4. \quad AB \\ + 37 \\ \hline 6A \end{array}$$

$$\begin{array}{r} 6. \quad AB \\ \times 5 \\ \hline CAB \end{array}$$

$$\begin{array}{r} 8. \quad A1 \\ + 1B \\ \hline B0 \end{array}$$

$$\begin{array}{r} 10. \quad 12A \\ + 6AB \\ \hline A09 \end{array}$$

### Solution:

1. There are two letters whose values are to be found out.

Study the addition in the ones column, i. e., from  $A + 5$  we get 2, i. e., the number whose ones digit is 2.

For this to happen, A must be 7 ( $\because A + 5 = 7 + 5 = 12$ ).

So for the addition in tens column, we have

$$1 + 3 + 2 = B \Rightarrow B = 6$$

So, the puzzle has been decoded as

$$\begin{array}{r} 37 \\ + 25 \\ \hline 62 \end{array}$$

$\therefore$  The possible values of A and B are 7 and 6 respectively.

2. There are three letters whose values are to be found out.

Study the addition in the ones column, i. e., from  $A + 8$  we get 3, i. e., the number whose ones digit is 3.

For this to happen, A must be 5 ( $\because A + 8 = 5 + 8 = 13$ ).

So for the addition in tens column, we have  $1 + 4 + 9 = B \Rightarrow 14 = B$

$\therefore$  Clearly, B is 4 and C is 1.

So the puzzle has been decoded as

$$\begin{array}{r} 45 \\ + 98 \\ \hline 143 \end{array}$$

$\therefore$  The possible values of A, B and C are 5, 4 and 1 respectively.

3. Since the ones digit of  $A \times A$  is A, it must be that  $A = 1$  or  $A = 5$  or  $A = 6$ .

**When  $A = 1$ , then**

$$\begin{array}{r} 11 \\ \times 1 \\ \hline 11 \end{array}$$

So, we cannot have  $A = 1$ .

**When  $A = 5$ , then**

$$\begin{array}{r} 15 \\ \times 5 \\ \hline 75 \end{array}$$

So, we cannot have  $A = 5$ .

**When  $A = 6$ , then**

$$\begin{array}{r} 16 \\ \times 6 \\ \hline 96 \end{array}$$

So, the choice of  $A = 6$  works out correctly.

So, the answer is  $A = 6$ , and

$$\begin{array}{r} 16 \\ \times 6 \\ \hline 96 \end{array}$$

4. There are two letters whose values are to be found : A and B.

Study the addition in the given puzzle. .

i. e., from  $B + 7$  we get A and from  $A + 3$  we get 6

Possible values can be

$0 + 7 = 7$	i. e., $A = 7$	but $7 + 3 \neq 6$ ,	so, rejected
$1 + 7 = 8$	i. e., $A = 8$	but $9 + 3 \neq 6$ ,	so, rejected
$2 + 7 = 9$	i. e., $A = 9$	but $9 + 3 \neq 6$ ,	so, rejected
$3 + 7 = 10$	i. e., $A = 0$	but $1 + 0 + 3 \neq 6$ ,	so, rejected
$4 + 7 = 11$	i. e., $A = 1$	but $1 + 1 + 3 \neq 6$ ,	so, rejected
$5 + 7 = 12$	i. e., $A = 2$	and $1 + 2 + 3 = 6$	

So, this value of  $B = 5$  works out correctly and  $B = 5$  gives A as 2. So, the puzzle has been decoded as

$$\begin{array}{r} 25 \\ + 37 \\ \hline 62 \end{array}$$

$\therefore A = 2$  and  $B = 5$ .