BASIC MATHEMATICS

MULTIPLICATION OF 3-DIGIT NUMBERS (100-999):

EXAMPLE 1:

783×654 =?

GIVEN:

N_1 = 783; N_2 = 654

SOLUTION

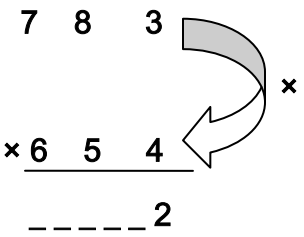
STEP 1: One's digit of the product is obtained by multiplying the one's digits of N_1 and N_2

One's digit of product = [One's digit of N_1 × One's digit of N_2]

= [3×4]

= 12

'1' is taken as carry to the Step 2 i.e., C_1 = 1



STEP 2:

Ten's digit of product = [Ten's digit of N_1×One's digit of N_2] +

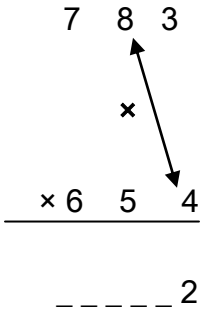
[One's digit of N_1×Ten's digit of N_2] + C_1

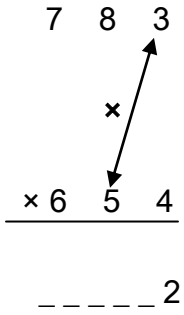
= [8×4] + [3×5] + 1

= 32 + 15 + 1

= 48

'4' is taken as the carry to Step 3 i.e., $C_2 = 4$





Add the Products of the above 2-steps. At the end of Step 2 we have

7 8 3

× 6 5 4

_ _ _ _ 8 2

STEP 3:

To calculate the **hundredth digit of the product**

= **[Hundredth digit of N_1×One's digit of N_2] + [Ten's digit of N_1 × Ten's digit of N_2]**

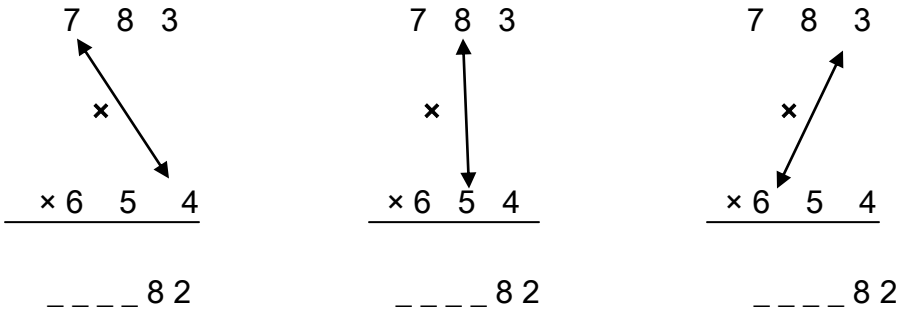
+ [One's digit of N_1×Hundredth digit of N_2] + C_2

= [7×4] + [8×5] + [3×6] + 4

= [28] + [40] + [18] + 4

= 90

Here, '9' is taken has carry i.e., $C_3 = 9$



Adding the products of above 3 steps we get

$$\begin{array}{r} 7\ \ 8\ \ 3 \\ \times 6\ \ 5\ \ 4 \\ \hline \_\_0\,8\,2 \end{array}$$

STEP 4:

To calculate the **thousand digit of the product**

= **[Hundredth digit of N_1×Ten's digit of N_2] + [Ten's digit of N_1 × Hundredth digit of N_2] + C_3**

= [7×5] + [8×6] + 9

= [35] + [48] + 9

= **9**2

Here, '9' is taken has carry i.e., **C_4 = 9**

Add the Products of the above 2-steps. At the end of Step 4 we have

$$\begin{array}{r} 7\ 8\ 3 \\ \times 6\ 5\ 4 \\ \hline \_2\,0\,8\,2 \end{array}$$

STEP 5:

To calculate the **remaining digit of the product**

= **[Hundredth digit of N_1×Hundredth digit of N_2] + C_4**

= [7×6] + 9

= [42] + 9

= **51**

$$\begin{array}{r} 7\ 8\ 3 \\ \times \\ 6\ 5\ 4 \\ \hline 5\,1\,2\,0\,8\,2 \end{array}$$

Therefore, 783×654 = 512082