

One- Line Multiplication

Uma Pada Dutta

FLAT NO. 5 A, MDA HEIGHTS, CHAS, BOKARO STEEL CITY, JHARKHAND (INDIA) PIN-827013

Abstract - Here we will find how to multiply the multi-digit numbers in one-line.

Keywords — multi-digit numbers, multiply, one-line.

I. INTRODUCTION

In the basic process of multiplication, we need to multiply the multiplicand with each digit of multiplier and place them in 2, 3 or 4 lines as per the number of digits of the multiplier. And finally one more line is required to add them for getting result of multiplication.

But here final result will be found in one-line only.

II. MATERIAL & METHOD

- When a multiplicand is multiplied by a multiplier, we get the result in one-line, called one-line multiplication.
- A multiplier is always smaller than the multiplicand and kept below matching with the right vertical digit, when doing multiplication.
- Multiplying one digit of multiplier with one digit of multiplicand is called an operation (or function).
- Result of operations are written in the result box from right to left. For multi-operations, results are added with the carry-over figure also.
- Number of operations: It is one less than sum of digits of multiplicand and multiplier.
- Nature of operations: It may be single, double, triple, quadruple, etc and are in a symmetric manner (ie, uniformly increasing & decreasing type with both ends as single operation).
For same number of digits of multiplicand and multiplier, operations are fully symmetric ie, 121, 12321, 1234321 etc.
For less number of digits in multiplier, operations are double or triple in the middle, depending on the digit of multiplier, i.e for 2-digit multiplier 1221 or 12221;
for 3-digits multiplier 123321 etc.
Nature of operations will be strictly as per diagram.

III. TABLE 1 BASIC PROCESS OF MULTIPLICATION

(Multi-Line System)

```
256 - multiplicand
x85 - multiplier of 2-digits
-----
1280 - 1st line
2048x - 2nd line
-----
21760 - 3rd line(result)
```

TABLE 2 (ONE-LINE SYSTEM)

- Multiply 75 with 25
- Number of operations = $2+2-1 = 3$
- Nature of operations = 121

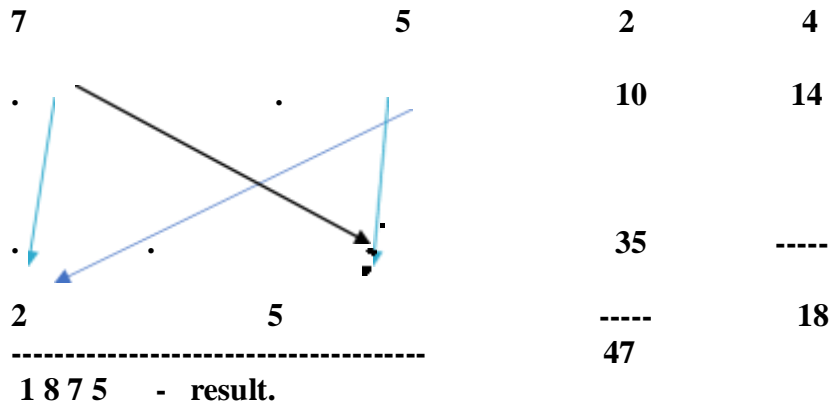


TABLE 3
(One-Line System)

- Multiply 536 with 68.
- Number of operation = $3 + 2 - 1 = 4$
- Nature of operation = 1221

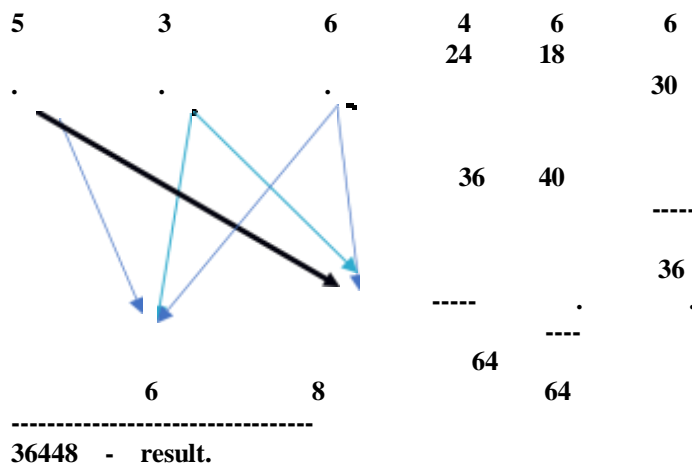
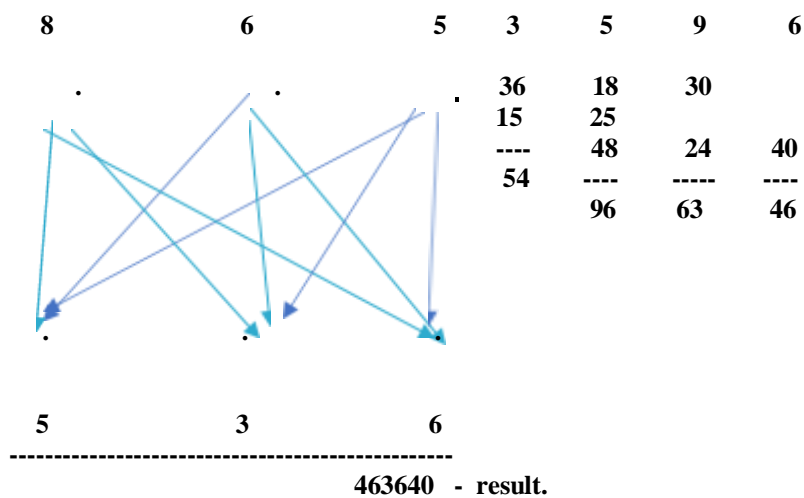


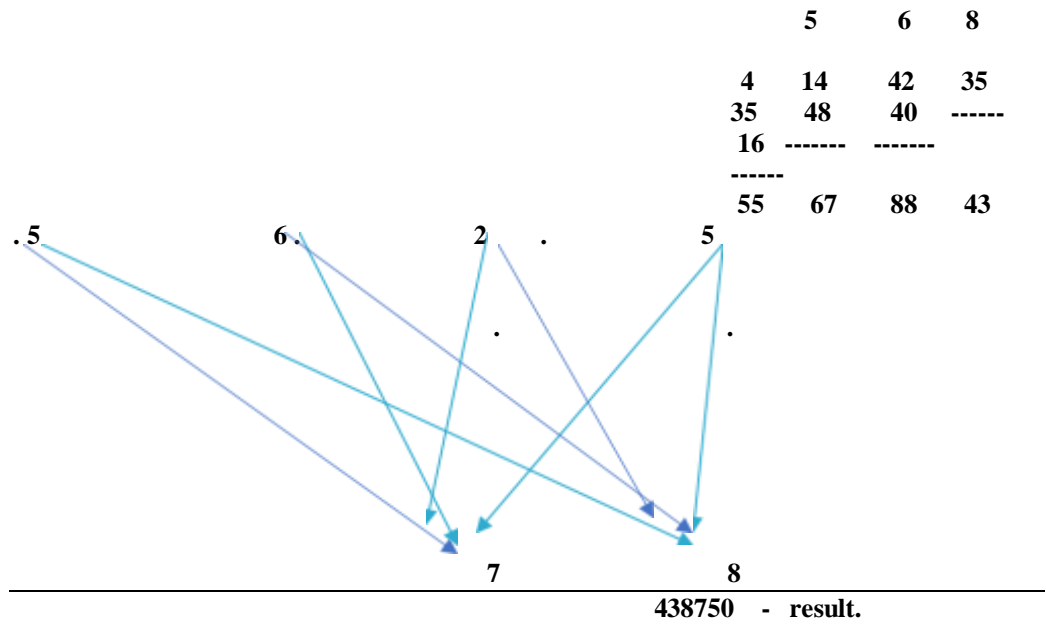
TABLE 4
(ONE-LINE SYSTEM)

- Multiply 865 with 536
- Number of operations = $3 + 3 - 1 = 5$
- Nature of operation = 12321



**TABLE 5
(ONE-LINE SYSTEM)**

- Multiply 5625 with 78.
- Number of operation = $4 + 2 - 1 = 5$
- Nature of operation = 12221



**TABLE 6
(ONE-LINE SYSTEM)**

- Multiply 8637 with 562.
- Number of operation = $4 + 3 - 1 = 6$
- Nature of operation = 123321

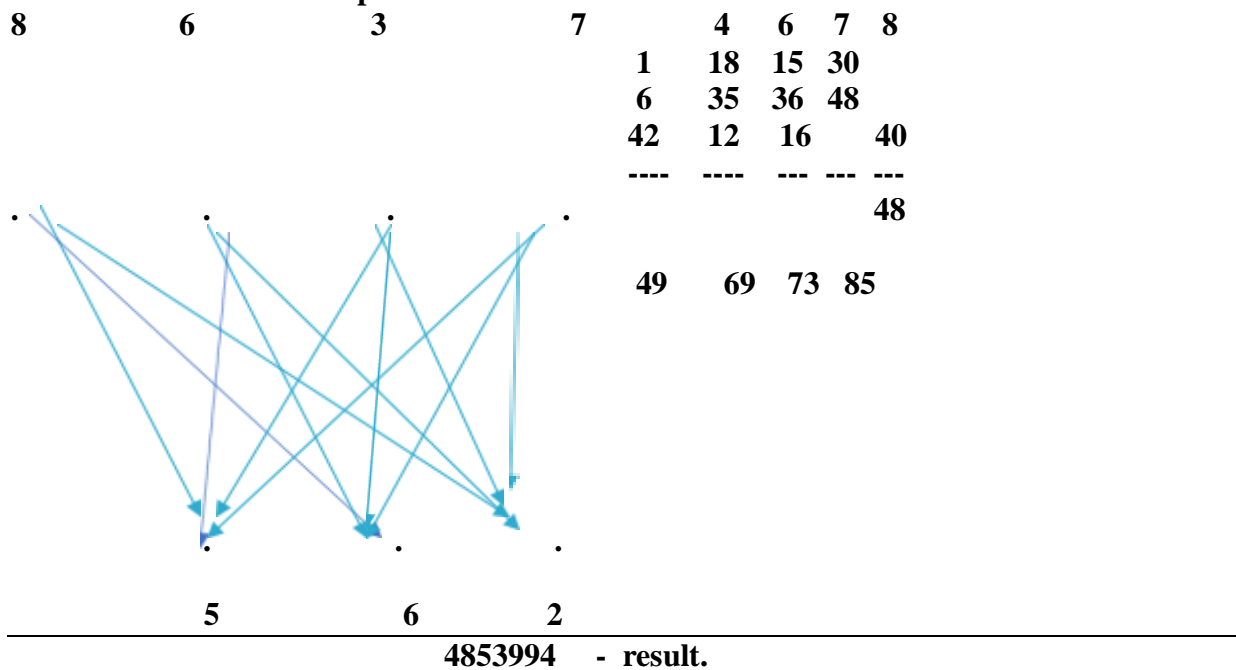
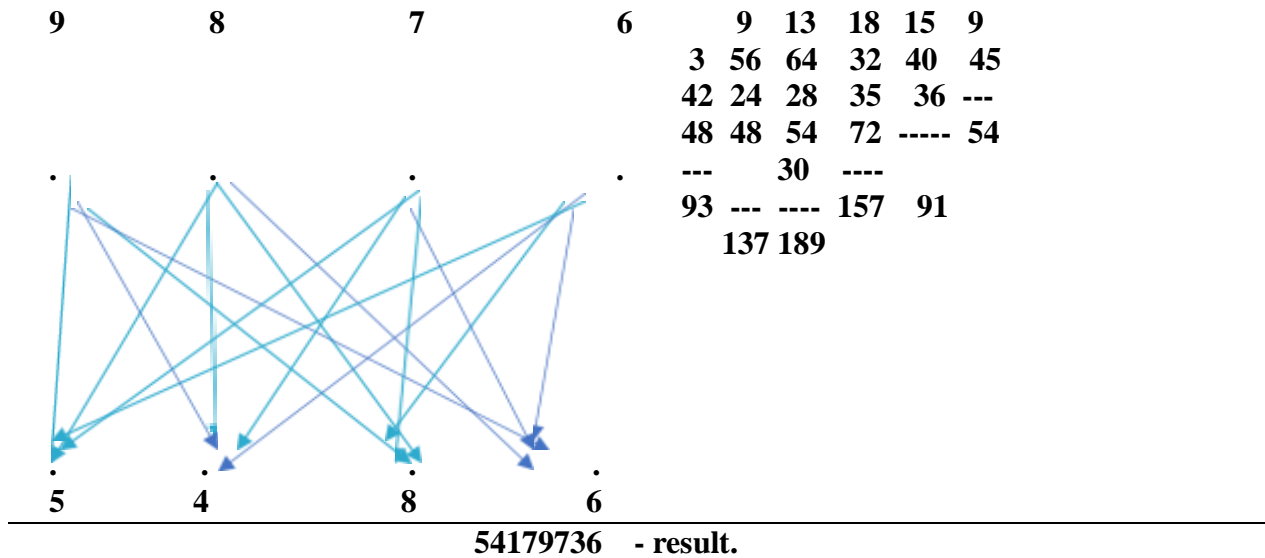


TABLE 7
(ONE-LINE SYSTEM)

- **Multiply 9876 with 5486.**
- **Number of operations = $4 + 4 - 1 = 7$**
- **Nature of operation = 1234321**



IV. CONCLUSION

In this article, the author developed a new method of multiplication for the lover of mathematics.

V. ACKNOWLEDGMENT

I would like to thank the anonymous referees for their time to read this manuscript carefully. I will be obliged to them for their interest on my work.

VI. REFERENCE

Nil