

"A Novel Method of Multiplication" by the application of the Vedic Sutram – Urdhwa Tiryagbhyam

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Introduction

The method of multiplication, using the Vedic Sutram as described by Jagadguru Shankaracharya Shri Bharati Krishna Tirtha Maharaja using the Vedic Sutram "Urdhwa Tiryagbhyam", both from Right to Left and Left to Right is exemplified in this paper. The elegance, simplicity and less time consuming nature is crystal clear in comparison to the existing working. This is also called a one line method. An attempt is also made to express the working by using C⁺⁺ Language. The method is confined to a column multiplication and is mainly of two types, Urdhwa (Vertical) and Tiryak (Cross wise)

Abstract

The details of the method of multiplication are explained in three different routes (A,B and C). For example, (A) from Right to Left (One line) (B) Left to Right and (C) Step method, which is clubbed with horizontal addition. This method is totally different from the existing method in the sense, that it is multiplication column wise and also in the placement of results and finalization to obtain the final value at different stages of working. But it is highly symmetrical, elegant and easy to perform and obtain the final result. The working starts with Urdhwa and ends with Urdhwa. All the three methods give the same result. Lert to Right is conceived for the first time by Swamiji. The methods are applicable to the multiplication of any digited number by any digited multiplier.

Method A for Right to Left

Let us consider the multiplication of the number 12546873(multiplicand) by 48032162 (multiplier). Swamiji has introduced two concepts. The multiplication is one digit of multiplier with one digit of multiplicand. He utilized pairs of columns and multiplies in the form of column wise. The sutram clearly explains that if the two digits belong to the same column, it is Urdhwa (Vertically) upwards and if one of the digits belong to different columns, it is a cross direction and is called "Tiryak" means across (cross) i.e. multiplication belongs to vertically disposed and crossly disposed column wise. The details are as given below between the given pairs of digits belong to two categories; a and b.

8	7	6	5	4	3	2	1	←Column
10^{7}	10^{6}	10^{5}	10^{4}	10^{3}	10^{2}	10^{1}	10^{0}	
1	2	5	4	6	8	7	3	Multiplicand - a
4	8	0	3	2	1	6	2	Multiplier - b

The working details are clearly explained.

Method A $(R \rightarrow L)$

Starting from Right hand and proceeding to the left extreme, the procedure is (on the top, the numbers indicate the number belonging to the columns)

First Step (10⁰)

The first step is to start the multiplication in the first column and is $2 \ge 3 = 0.6$. The first step is Urdhwa Type and indicated in the Figure-1. The part of the answer due to first step is written in one line as 0.6.



First Step (10⁰)

3	$2 \times 3 =_0 6$	
† 2	6 - Answer Line 0 - Carrying suffix	
	Fig.	- 1

Six in the Answer Line, the number on the left hand side belongs to its immediate higher position which is to be added to the result of the second step. The answer is in 10^0 units.

Second Step (10¹)

The First column should be now multiplied with the second column. While doing so, a cross multiplication will occur, giving two results belonging to the same unit and hence are to be added. For example

	$2 \ge 7 = 14$, $6 \ge 3 = 18$; $14 + 18 = 32$ To this, the digit noted as suffix in the result of the first step is to be added, $32+0=32$. This is shown as	
	2 6 - Answer Line3 0 - Carrying suffix	
Fig – 2		

Third Step (10^2)

The working part to be considered as

	Multiplication of the 1 st column with, third column to obtain the result in the 3 rd position i.e., belongs to 10^2 . One has to multiply 2 x 8 =16, 1 x 3 =3 and also 6 x 7 = 42; When added, $16 + 3 + 42 = 61$. With a further addition to the previous suffix 3, becomes 64. Shown as 4 in answer line and 6 as its suffix.	
	4 2 6 – answer line 6 3 0 – Carrying Suffix	
Fig-3		

Fourth Step (10³)

One can easily follow the rest of the steps as 1st Column x 4th Column and proceed towards left upto the multiplication of the last column of the given problem as viewed from the Right end. These are systematically shown in the figures, given in succession upto 1st Column x 8th Column.

$ \begin{array}{c} 6 & 8 & 7 & 3 \\ 2 & 1 & 6 & 2 \end{array} $	2 x 6 =12, 2 x 3 = 6, 6 x 8 = 48, 1 x 7 = 7. When added, 12+6+48+7=73. Which when further added to the previous suffix 6, to become 79. 9 is in answer line and 7 in the carrying suffix line.
	9 4 2 6 - answer line 7 6 3 0 – Carrying suffix
	7 6 3 0 – Carrying suffix



Fifth Step (10⁴)

For the fifth step, multiplication part is

4 6 8 7 3 3 2 6 2	$2 \times 4 = 8$, $3 \times 3 = 9$, $6 \times 6 = 36$, $2 \times 7 = 14$, $1 \times 8 = 8$, When added $8 + 9 + 36 + 14 + 8 = 75$. Further, when added with the previous suffix 7, it is 82.
	2 9 4 2 6 - Answer line 8 7 6 3 0 - Carrying Suffix

Fig-5

Sixth Step (10⁵)

5 4 6 8 7 3 0 3 2 1 6 2	$2 \ge 5 = 10, 0 \ge 3 = 0, 6 \ge 4 = 24, 3 \ge 7 = 21, 1 \ge 6 = 6, 2 \ge 8 = 16.$ When added, $10+0+24+21+6+16=77$. When Further added to the previous suffix 8 it is 85.	
0 5 2 1 0 2	previous suffix 8, it is 85	
	5 2 9 4 2 6 - Answer Line	
	887630 - Carrying Suffix	
Fig-6		

Seventh Step (10⁶)

2 5 4 6 8 7 3	2 x 2 = 4, 8 x 3 = 24, 6 x 5 = 30, 0 x 7 =0, 1 x 4 =4, 3 x 8 = 24, 2 x 6	
	= 12. When added, $4+24+30+0+4+24+12=98$. When further	
8 0 3 2 1 6 2	added to the previous suffix 8, it is 106	
	*	
	6529426 - Answer Line	
	10 8 8 7 6 3 0 - Carrying Suffix	
Fig – 7		

Eighth Step (10⁷)

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$2 \ge 1 = 2, 4 \ge 3 = 12, 6 \ge 12, 8 \ge 7 = 56, 1 \ge 5, 0 \ge 8 = 0, 2 \ge 4$ = 8, 3 \xeta 6 = 18. When added, 2+12+12+56+5+0+8+18=113. When further added to the previous suffix 10, it is 123	
	3 6 5 2 9 4 2 6 - Answer Line 12 10 8 8 7 6 3 0 – Caryying suffix	
Fig-8		

As the multiplication of the 1^{st} column with all the other columns is over, one has to start with the 2^{nd} column with the 8^{th} column continued individually by the other columns in succession i.e. 3^{rd} column with 8^{th} , 4^{th} column with 8^{th} , 5^{th} column with 8^{th} , 6^{th} column with 8^{th} , 7^{th} column with 8^{th} and finally 8^{th} column by itself. One has to perform enbloc operation to cover the remaining 7 steps to get the final result.

Ninth Step (10^8) – Multiplication of 2^{nd} column with 8^{th} column (enbloc)

1 2 5 4 6 8 7	3	$6 \ge 1 = 6, 4 \ge 7 = 28, 1 \ge 2 = 2, 8 \ge 8 = 64, 2 \ge 5 = 10, 0 \ge 6 = 0, 3 \ge 4$ =12. When added $6+28+2+64+10+0+12=122$. When further	
4 8 0 3 2 1 6	2	added to the previous suffix 12, it is 134	
		4 3 6 5 2 9 4 2 6 - Answer Line	
		13 12 10 8 8 7 6 3 0 - Carrying suffix	
Fig – 9			



Tenth Step (10⁹) - Multiplication of 3rd column with 8th column (enbloc)

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$1 \ge 1, 4 \ge 32, 2 \ge 4, 8 \ge 6 = 48, 3 \ge 5 = 15, 0 \ge 4 = 0.$ When added, $1+32+4+48+15+0=100$. When further added to the previous suffix 13, it is 113.		
	3 4 3 6 5 2 9 4 2 6 - Answer line 11 13 12 10 8 8 7 6 3 0 - Carrying suffix		
$F_{int} = 10$			

 $Fig-10 \label{eq:Fig-10}$ Eleventh Step (10¹⁰) Multiplication of 4th column with 8th column (enbloc)

1 2 5 4 6 8 7 3 2	$2 \ge 1 = 2, 4 \ge 6 = 24, 3 \ge 2 = 6, 8 \ge 4 = 32, 0 \ge 5 = 0$. When added		
	2+24+6+32+0=64. On further addition to the previous suffix 11, it		
4 8 0 3 2 1 6 2 i	is 75		
	5 3 4 3 6 5 2 9 4 2 6 - Answer line		
	7 11 13 12 10 8 8 7 6 3 0 – Carrying Suffix		
E:~ 11			

Fig - 11 Twelth Step (10¹¹) - Multiplication of 5th column with 8th column (enbloc)

1 2 5 4 6 8 7 3	$3 \times 1 = 3$, $4 \times 4 = 16$, $0 \times 2 = 0$, $8 \times 5 = 40$. When added,
	3+16+0+40 = 59. With further addition to the previous suffix 7, it
4 8 0 3 2 1 6 2	is 66
	6 5 3 4 3 6 5 2 9 4 2 6 - Answer line
	6 7 11 13 12 10 8 8 7 6 3 0 - Carrying Suffix
	Fig = 12

 $F_{1g} = 12$ Thirteenth Step (10¹²) - Multiplication of 6th column with 8th column (enbloc)

	$0 \ge 1 = 0, 4 \ge 5 = 20, 8 \ge 2 = 16$. When added, $0+20+16 = 36$.
	When further added to the previous suffix 6, it is 42
4 8 0 3 2 1 6 2	2 6 5 3 4 3 6 5 2 9 4 2 6 - Answer line
	4 6 7 11 13 12 10 8 8 7 6 3 0 - Carrying suffix
	Fig. 13

Fourteenth Step (10¹³) - Multiplication of 7th column with 8th column (enbloc)

	5	4	6	8	7	3	$8 \ge 1 = 8, 4 \ge 2 = 8$. When added, $8 + 8 = 16$. When further added to the previous prefix 4, it is 20
4~8	0	3	2	1	6	2	0 2 6 5 3 4 3 6 5 2 9 4 2 6 - Answer line 2 4 6 7 11 13 12 10 8 8 7 6 3 0 - Carrying suffix
							Fig – 14

Fifteenth Step (10¹⁴) Multiplication of 8th column with 8th column (enbloc) – Urdhwa type

1 ▲	2	5	4	6	8	7	3	4 x 1	1 =	4. \	Whe	en a	dded	to t	ne pi	revi	ous	pre	efix.	, it	is 6		
4	8	0	3	2	1	6	2	6	0	2	6	4	53	4	1	3	6	5	2	9	4	2	6 - Answer
								line															
									-			_					-	-	_		-	-	
								0	2	4	6	7	11	13	12	10	8	8	7	6	3	0	- Carrying
																							Suffix
																							Sum
	Fig = 15																						

The answer is : 602653436529426



The first and the last are the Urdhwa type

The above method is one line method briefly it is as above (15 Figures)

It is noticed that for all even operations, the sub multiplications are only Tiryak, where as for the odd operations, with the exception of one Urdhwa, the others are Tiryak type.

A) R→L Multiplication (One line method) the entire calculation can be expressed as

						1	2	5	4	6	8	7	3	F	R→L	Compare
						4	8	0	3	2	1	6	2			existing
0	2	6	5	3	4	3	6	5	2	9	4	2	6	A	Answer Line	method
2	4	6	7	11	13	11	10	8	8	7	6	3	0	C	Carrying Suffix	
swer	: 60	2653	8436	5294	426											
L→I	R Mı	ultip	licat	ion												
2	5	4	e	5	8	7	3								L→R	
8	0	3	2	2	1	6	2									
6	6	9	4	1	0	2	3	8	7	5	3	1	2	6	_ ↑	
3	5	6	1	10	12	11	9	7	7	7	6	3	0		Add	
0	2	6	5	5	3	4	3	6	5	2	9	4	2	6	_	
	$ \begin{array}{c} 0\\ 2\\ swer\\ L \rightarrow I\\ 2\\ 8\\ 6\\ 3\\ 0\\ \end{array} $	$ \begin{array}{ccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$1 2 4 8$ $0 2 6 5 3 4 3 6$ $2 4 6 7 11 13 11 10$ swer: 602653436529426 $L \rightarrow R$ Multiplication $2 5 4 6 8 7 3$ $8 0 3 2 1 6 2$ $6 6 9 4 0 2 3$ $3 5 6 10 12 11 9$ $0 2 6 5 3 4 3$	$1 2 5$ $4 8 0$ $0 2 6 5 3 4 3 6 5$ $2 4 6 7 11 13 11 10 8$ swer : 602653436529426 $L \rightarrow R $ Multiplication $2 5 4 6 8 7 3$ $8 0 3 2 1 6 2$ $6 6 9 4 0 2 3 8$ $3 5 6 10 12 11 9 7$ $0 2 6 5 3 4 3 6$	$1 2 5 4$ $4 8 0 3$ $\boxed{0 2 6 5 3 4 3 6 5 2}$ $\boxed{2 4 6 7 11 13 11 10 8 8}$ swer: 602653436529426 $\textbf{L} \rightarrow \textbf{R}$ $\boxed{1 13 11 10 8 8}$ $\boxed{3 2 5 4 6 8 7 3}$ $\boxed{2 5 4 6 8 7 3}$ $\boxed{3 5 6 10 12 11 9 7 7}$ $\boxed{0 2 6 5 3 4 3 6 5}$	$1 2 5 4 6 \\ 4 8 0 3 2 \\ \hline 0 2 6 5 3 4 3 6 5 2 9 \\ \hline 2 4 6 7 11 13 11 10 8 8 7 \\ \hline swer : 602653436529426 \\ \hline L \rightarrow R Multiplication \\ \hline 2 5 4 6 8 7 3 \\ \hline 8 0 3 2 1 6 2 \\ \hline 6 6 9 4 0 2 3 8 7 5 \\ \hline 3 5 6 10 12 11 9 7 7 7 \\ \hline 0 2 6 5 3 4 3 6 5 2 \\ \hline \end{cases}$	$1 2 5 4 6 8 \\ 4 8 0 3 2 1 \\ \hline 0 2 6 5 3 4 3 6 5 2 9 4 \\ \hline 2 4 6 7 11 13 11 10 8 8 7 6 \\ \hline swer : 602653436529426 \\ \hline L \rightarrow R Multiplication \\ \hline 2 5 4 6 8 7 3 \\ \hline 8 0 3 2 1 6 2 \\ \hline 6 6 9 4 0 2 3 8 7 5 3 \\ \hline 3 5 6 10 12 11 9 7 7 5 3 \\ \hline 0 2 6 5 3 4 3 6 5 2 9 \\ \hline \end{array}$	$1 2 5 4 6 8 7$ $4 8 0 3 2 1 6$ $0 2 6 5 3 4 3 6 5 2 9 4 2$ $2 4 6 7 11 13 11 10 8 8 7 6 3$ swer : 602653436529426 $\mathbf{L} \rightarrow \mathbf{R}$ Multiplication $2 5 4 6 8 7 3$ $8 0 3 2 1 6 2$ $6 6 9 4 0 2 3 8 7 5 3 1$ $3 5 6 10 12 11 9 7 7 7 6 3$ $0 2 6 5 3 4 3 6 5 2 9 4$	$1 2 5 4 6 8 7 3$ $4 8 0 3 2 1 6 2$ $\boxed{0 2 6 5 3 4 3 6 5 2 9 4 2 6}{2 4 6 7 11 13 11 10 8 8 7 6 3 0}$ swer: 602653436529426 $\mathbf{L} \rightarrow \mathbf{R}$ Multiplication $2 5 4 6 8 7 3$ $8 0 3 2 1 6 2$ $\boxed{6 6 9 4 0 2 3 8 7 5 3 1 2}{3 5 6 10 12 11 9 7 7 7 6 3 0}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$1 2 5 4 6 8 7 3 \qquad R \rightarrow L$ $4 8 0 3 2 1 6 2$ $1 6 2 \qquad Answer Line Carrying Suffix$ $\frac{1}{2} 4 6 7 11 13 11 10 8 8 7 6 3 0$ $\frac{1}{2} 4 6 7 11 13 11 10 8 8 7 6 3 0$ $L \rightarrow R \qquad L \rightarrow R$ $\frac{2}{6} 5 4 6 8 7 3 \qquad L \rightarrow R$ $\frac{2}{6} 6 9 4 0 2 3 8 7 5 3 1 2 6 \uparrow$ $\frac{3}{5} 6 10 12 11 9 7 7 7 6 3 0$ $\frac{1}{6} 5 3 4 3 6 5 2 9 4 2 6$

Answer : 602653436529426

Answer is Same

C) Step wise

The way of multiplication is as already given. The Corresponding identity is given.

R→L	L→R
Step 1	Step 15
Step 2	Step 14
Step 3	Step 13
Step 4	Step 12
Step 5	Step 11
Step 6	Step 10
Step 7	Step 9
Step 8	Step 8
Step 9	Step 7
Step 10	Step 6
Step 11	Step 5
Step 12	Step 4
Step 13	Step 3
Step 14	Step 2
Step 15	Step 1

The multiplication is carried out from $L\rightarrow R$, starting with the 1st column in the left side in the same manner as in the $R\rightarrow L$. After the first Urdhwa result from the result of each step value, the last digit has to be shown as in the answer line, but the others have to be placed under each previous value directly, so as to perform addition. But not as a suffix value as in the case of $R\rightarrow L$ multiplication.

On the addition, the result of multiplication $L \rightarrow R$ is found exactly as that of $R \rightarrow L$ multiplication. The corresponding identity of the multiplications are drawn below. Resulting Number (R x L = L x R)

As 602653436529426



C) Step Wise – Identity of the values

R-	→L	Step	
10^{0}	6	1^{st}	
10 ¹	32	2^{nd}	
10^{2}	61	3 rd	
10^{3}	73	4^{th}	
10 ⁴	75	5 th	u
10^{5}	77	6^{th}	itic
10^{6}	98	7 th	_ pp
107	113	8^{th}	c A
10 ⁸	122	9 th	edi
10^{9}	100	10^{th}	Ň
10^{10}	64	11^{th}	
10 ¹¹	59	12 th	
10 ¹²	36	13 th	
10 ¹³	16	14^{th}	
10 ¹⁴	04	15 th	
Thes	e are to be	nut in	the

horizontal manner, starting with 10^0 to 10^{14} from R \rightarrow L to be clubbed with horizontal addition by Vedic Method This is a one line method.

L–	→R	Step									
10 ¹⁴	04	1 st									
10^{13}	16	2^{nd}									
10^{12}	36	3^{rd}									
10^{11}	59	4^{th}									
10^{10}	64	5^{th}	n								
10^{9}	100	6^{th}	litic								
10^{8}	122	7^{th}	¢dd								
10^{7}	113	8^{th}	C A								
10^{6}	98	9^{th}	edi								
10^{5}	77	10^{th}	Ň								
10^{4}	75	11^{th}									
10^{3}	73	12^{th}									
10^{2}	61	13 th									
10^{1}	32	14^{th}									
10^{0}	06	15^{th}									
This is	This is a two line followed by										
addition.											
The steps are to be arranged											
similarly	y for the V	edic Ad	dition.								

Vedic Addition (Horizontal)

The addition of several numbers in different powers are to be placed horizontally and in ascending order from R to L as shown. (Fig. Demo Vedic Addition-VA)

	10 ⁷	10^{6}	10^{5}	10^{4}	10^{3}	10 ²	10^{1}	10^{0}
	Н	G	F	E	D	С	В	А
0	150	147	28	1024	5	327	487	1258
16	16	13	102	4	38	61	125	
16	6	0	0	8	3	8	2	8

The numbers to be added by Vedic Method should be arranged power wise and Horizontal wise HGFEDCBA In the summation, consider the last digit of the last number A as the last digit of the addition (result). The remaining digits of A should be shifted to the number B into the respective places of its position, for further addition with the given data. For example after the result in the 1st column as 8, the remaining 125 is placed under 487 and added the last digit is 2 and the rest is 61, which is shifted to the next. This is to be continued till one reaches the last number (H) to be added. One will thus observe the final result. This is the Vedic addition of the given numbers given in a systematic order of powers. This is clearly shown in the Figure.

The answer is 1660083828.

This method is compared with the existing method which is given below.



1000111	💀 Vedic Addition -Demo.EXE								- 🗆 X
			VEDIC A	IDDITION	— Deno				
10 C		10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0
ti	16	150 16	147 13	28 102	1024 4	5 38	327 61	487 125	1258
G	16	6	Ø	0	8	3	8	2	8
				177.000					
1		R	esult :	166008:	3828_				

VA - This method is much simpler than the existing method, in operation

						1	8	7	0	
						4	0	/	0	
					3	2	1	0	0	
						5	0	0	0	
		1	0	2	4	0	0	0	0	
			2	8	0	0	0	0	0	
	1	4	7	0	0	0	0	0	0	
1	5	0	0	0	0	0	0	0	0	
1	6	6	0	0	8	3	8	2	8	Existing Method

Existing Method of Multiplication

							1	2	5	4	6	8	7	3
							4	8	0	3	2	1	6	2
							2	5	0	9	3	7	4	6
						7	5	2	8	1	2	3	8	
					1	2	5	4	6	8	7	3		
				2	5	0	9	3	7	4	6			
			3	7	6	4	0	6	1	9				
		0	0	0	0	0	0	0	0					
1	0	0	3	7	4	9	8	4						
5	0	1	8	7	4	9	2							
6	0	2	6	5	3	4	3	6	5	2	9	4	2	6

Compare this with R X L or L X R results Fig A1 and Fig B1 or $R\rightarrow L$ one line method, $L\rightarrow R$ multiplication method.

Vedic Method when applied to the Stepwise results obtained in $R \rightarrow L$ multiplication and $L \rightarrow R$ methods are given below. $R \rightarrow L$ method with stepwise components being added by Vedic Method. Refer to A and B methods. In this multiplication, we are familiar that, we have no idea of Left to Right Multiplication, as it gives a different Value. The Vedic Method L X R gives the same value as



that of R X L under different placement using Vedic Principle showing that L X R is also possible – in giving the same value as that of R X L Value.

Figures

R→L Multiplication - One line with Carry Details (A1)

📾 Right Left One line -Work Shee	- 🗆 ×
Right to Left multiplication One Line with Carry Details - Wo URDHUA TIRYAGBHYAM SUTRAM	'k Sheet
Enter each digit in Multiplicand : 1 2 5 4 6 8 7 3 Enter each digit in Multiplier : 4 8 0 3 2 1 6 2	
1 2 5 4 6 8 7	3
4 8 0 3 2 1 6	2
240266 5 3 4 3 6 5 2 9 4 2 6 7 11 13 12 10 8 8 7 6 3	6
Product : 602653436529426_	

R→L Multiplication (Direct Result) (A)

📾 Right Left Direct Result - Wor	- 🗆 🗙											
Right to Left multiplication Direct Result - Worksheet												
URDHVA TIRYAGBHYAM SUTRAM												
Enter each digit in Multiplicand : 1 2 5 4 6 8 7 3												
Enter each digit in Multiplier : 4 8 0 3 2 1 6 2												
Product : 602653436529426												

$R \rightarrow L$ Step wise with Vedic Addition (A – 15 Figs)

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Steps are to be carried out to VEDIC ADDITION $_$

	🐝 Right Lef	t Steps -	Work Sh	ieet.							- 🗆 🗙	🛤 Righ	t Left Steps	Work Sh	eet.							- 🗆 ×
																JEDIC A						
					VEDIC H.	UUIIION																
		10^9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0		10^9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0
		100	122	113	98	77	75	73	61	32	6		100	122	113	98	77	75	73	61	32	6
																				3_		
											6											6
							10^14	10^13	10^12	10^11	10^10							10^14	10^13	10^12	10^11	10^10
							4	16	36	59	64							4	16	36	59	64
						1											-					
	1																2					
		-										Dial	t Loft Stone	Work Sh	oot							
•	🛋 Right Left	t Steps -	Work Sh	eet.							- - ×	🔤 Rigt	ıt Left Steps	- Work Sh	eet.							- 🗆 X
C	🛪 Right Left	t Steps -	Work Sh	eet.							- 🗆 X	📼 Rigi	it Left Steps	- Work Sh	eet.							_ 🗆 🗙
	🛪 Right Left	t Steps -	Work Sh	eet.	UEDIC AI	DDITION					_ 🗆 🗙	ex Righ	it Left Steps	- Work Sh	eet.	JEDIC A	DDITION					- X
	🛪 Right Left	t Steps -	Work Sh	eet.	VEDIC A	DDITION					- - X	ex Rigi	ıt Left Steps	- Work Sh 	eet.	JEDIC A	DDITION					
	Right Left	10^9	16/28	eet.	UEDIC AJ	10^5	19^4		10^2	10^1	- X	ex Rigi	tt Left Steps 10^9	- Work Sh	eet.	JEDIC A	DDITION 10^5	10^4	10^3	10^2	10^1	- 🗆 X
	A Right Left	t Steps - 10^9 100	Work Sh	eet.	UEDIC A) 10^6 98	10^5 77	10^4 75	 10^3 73	10^2	10^1 32	- X 10^0	en Rigt	10^9 100	• Work Sh 10^8 122	eet. 10^7 113	JEDIC A 10^6 98	DDITION 10^5 77	10^4 75	10 ^{^3}	10^2 61	10^1 32	- 🗆 X 10^0 6
c	र Right Left	10^9 100	Work Sh	eet.	UEDIC A1	DDITION 10^5 77	10^4 75	10^3 73	10^2 61	10^1 32	<mark>- X</mark> 10^0 6	€ Rig!	10^9 100	• Work Sh 10^8 122	eet.	JEDIC A) 10^6 98	DDITION 10^5 77	10^4 75	 10^3 73	10^2 61	10^1 32	- X .
c	ss Right Leff	t Steps - 10^9 100	Work Sh 10^8 122	eet.	UEDIC AJ 10^6 98	DDITION 10^5 77	10^4 75	10^3 73 6	10^2 61 3	10^1 32	X 18^0 6	ex Rig	it Left Steps 10^9 100	• Work Sh 10^8 122	eet.	JEDIC AJ 10^6 98	DDITION 10^5 77	10^4 75 7	 10^3 73 6	10^2 61 3	10^1 32	∎ x 18^8 6
	s Right Left	1 Steps - 10^9 100	Work Sh 10^8 122	eet. 10^7 113	UEDIC A) 10^6 98	DDITION 10^5 77	10^4 75	10^3 73 6	10^2 61 3 4	10^1 32 2	× 10^0 6	cx Rig	It Left Steps 10^9 100	- Work Sh 10^8 122	eet.	JEDIC A) 10^6 98	DDITION 10^5 77	10^4 75 7	10^3 73 6 9	10^2 61 3 4	10^1 32 2	∎ x 10^0 6
	a Right Leff	10^9 100	Work Sh 10^8 122	eet.	UEDIC A) 10^6 98	DDITION 10^5 77	10^4 75	10^3 73 6	10^2 61 3 4	10^1 32 2	× 10^0 6	cx Rig	i t Left Steps 10^9 100	- Work Sh 10^8 122	eet.	JEDIC A) 10^6 98	10^5 77	10^4 75 7	10^3 73 6 9	10^2 61 3 4	10^1 32 2	- • × 10^0 6
	ss Right Leff	10 [^] 9	Work Sh 10^8 122	eet.	UEDIC A1 10^6 98	DDITION 10^5 77	10^4 75 10^14	10^3 73 6 10^13	10^2 61 3 4 10^12	10^1 32 2 10^11	X 10^0 6 10^10	cx Rig	nt Left Steps 10^9 100	- Work Sh 10^8 122	eet.	JEDIC AJ	DDITION 10^5 77	10^4 75 7 10^14	10^3 73 6 9 10^13	10^2 61 3 4 10^12	10^1 32 2 10^11	10^0 6
	s Right Leff	18 ^9 100	Work Sh 10^8 122	eet. 10^7 113	UEDIC A) 10^6 98	DDITION 10^5 77	10^4 75 10^14 4	10^3 73 6 10^13 16	10^2 61 3 4 10^12 36	10^1 32 2 10^11 59	× 18^0 6 18^10 64	cs Rig	It Left Steps 10^9 100	- Work Sh 10^8 122	eet.	JEDIC AJ 10^6 98	10^5 77	10^4 75 7 10^14 4	10^3 73 6 9 10^13 16	10^2 61 3 4 10^12 36	10^1 32 2 10^11 59	× 10^0 6 10^10 64
	s Right Leff	10 [^] 9	10^8 122	eet. 10^7 113	98	10 ⁻⁵	10^4 ?5 10^14 4	10^3 73 6 10^13 16	10^2 61 3 4 10^12 36	10^1 32 2 10^11 59	× 10^0 6 18^18 64	cx Rig	18 ^9 10 [°] 9	Work Sh 10^8 122	eet. 10^7 113	JUEDIC A) 10^6 98	10 ⁻⁵ 77	10^4 75 7 10^14 4	10°3 73 6 9 10°13 16	10^2 61 3 4 10^12 36	18^1 32 2 18^11 59	- X 10^0 6 10^10 64
	s Right Leff	10 ⁹ 10	10°8 122	eet.	UEDIC A1 10^6 98	18 ⁵ 77	18^4 75 18^14 4	10^3 73 6 10^13 16	10^2 61 3 4 10^12 36	10°1 32 2 10°11 59	× 10^0 6 6 10^10 64	CX Rig	18 -6ft Steps 18^9 180	Work Sh	set. 18^7 113	10°6 98	10°5 79	10^4 75 7 10^14 4	10^3 73 6 9 10^13 16	10^2 61 3 4 10^12 36	18^1 32 2 18^11 59	10^0 6 10^10 64

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🛤 Right Left St	teps -	Work Sh	eet.							- 🗆 ×
				VEDIC A	DDITION					
10	7~9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0
10	30 30	122	113	98	77	75	73	61	32	6
					8					
										6
						10^14	10^13	10^12	10^11	10^10
						4	16	36	59	64
					-					
Right Left St	teps -	Work Sh	eet		5					- 🗆 X
				UFDIC A						
			•-							
10	0^9 00	10^8 122	10^7 113	10^6 98	10^5 77	10^4 75	10^3 73	10^2 61	10^1 32	10^0 6
			10	8	8	7	6	3		
			10	6	5		9	4		6
						10^14	10^13	10^12	10^11	10^10
						4	16	36	59	64
					7					
Right Left St	teps -	Work Sh	eet.							- 🗆 X
				VEDIC A	DDITION					
10	0^9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0
10	96	122	113	98		75	73	61	32	6
	13	12 4	10	8	8	2	6 9	3	2	6
						10^14	10^13	10^12	10^11	10^10
						4	16	36	59	64
					9					

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Right Left Steps -	Work St	ieet.							- 🗆 X
			VEDIC A	DDITION					
10^9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0
100	122	113	98	77	75	73	61	32	6
13	12	10	8	8		6			
3	4						4		6
					10^14 4	10^13	10^12 36	10^11	10^10
								<i>7_</i>	5
				11					
🚥 Right Left Steps -	Work SI	neet.		11					- 🗆 ×
10^9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0
100	122	113	98	77	75	73	61	32	6
13	12	10	8	8		6			
3	4	3	6	5	2	9	4	2	6
					10^14	10^10	10^10	10^11	n r^n r
					4	16 13	36	59	64
						4	6	7	11
						7	2		5
				13					
🚥 Right Left Steps -	Work Si	neet.							- 🗆 X
			VEDIC A						
10^0	10^0	1045	10%	1945	10^4	1842	16^2	184	10^0
10-9	122	113	98	77	75	73	61	3 <u>2</u>	10 0 6
13	12	10	8	8	7	6	3		
3	4	3	6	5		9	4		6
					10^14	10^13	10^12	10^11	10^10
					4	16	36	59	64
									11
						0			5
				15					



L→R Multiplication - Direct Result (B)



L→R Multiplication One line answer with carry details (B1)

Left to Right multiplication Answer with Carry Details - Work Shee URDHUA TIRYAGBHYAM SUTRAM r each digit in Multiplicand : 1 2 5 4 6 8 7 3 ter each digit in Multiplier : 4 8 0 3 2 1 6 2 1 2 5 4 6 8 7 3
Left to Right multiplication Answer with Carry Details - Work Shee URDHVA TIRYAGBHYAM SUTRAM r each digit in Multiplicand : 1 2 5 4 6 8 7 3 ter each digit in Multiplier : 4 8 0 3 2 1 6 2 1 2 5 4 6 8 7 3
Left to Right multiplication Answer with Carry Details - Work Shee URDHVA TIRYAGBHYAM SUTRAM r each digit in Multiplicand : 1 2 5 4 6 8 7 3 ter each digit in Multiplier : 4 8 0 3 2 1 6 2 1 2 5 4 6 8 7 3
URDHVA TIRYAGBHYAM SUTRAM r each digit in Multiplicand : 1 2 5 4 6 8 7 3 ter each digit in Multiplier : 4 8 0 3 2 1 6 2 1 2 5 4 6 8 7 3
r each digit in Multiplicand : 1 2 5 4 6 8 7 3 ter each digit in Multiplier : 4 8 0 3 2 1 6 2 1 2 5 4 6 8 7 3
r each digit in Multiplicand : 1 2 5 4 6 8 7 3 ter each digit in Multiplier : 4 8 0 3 2 1 6 2 1 2 5 4 6 8 7 3
1 2 5 4 6 8 7 3
1 2 5 4 6 8 7 3
1 2 5 4 6 8 7 3
4 8 0 3 2 1 6 2
uct :
466940238753126n
1 3 5 6 10 12 11 9 7 7 7 6 3 0 y Line
6 0 2 6 5 3 4 3 6 5 2 9 4 2 6



L→R Multiplication Step wise with Vedic Addition (C)

F	🔤 Left	Right N	lultpli	cation St	eps							- 🗆 🗙			
1		Le	ft to	Right	multip	licatio	n Stepw	ise with	Vedic	Additio	ın – Wor	k Sheet			
	URDHUA TIRYAGBHYAM SUTRAM														
	Enter each digit in Multiplicand : 1 2 5 4 6 8 7 3														
	Ente	r each	digi	t in	Multipl	ier : 4	803	2162							
	1	2	5	4	68	7	3								
	4	8	Ø	3	2 1	6	2								
	4	16	36	59	64 1	00 122	113	98 77	75	73 61	32	6_			
				Steps	are to	be car	ried ou	t to VED	IC ADDI	TION					
	🖾 Left	Right A	Aultpli	cation St	teps							- 🗆 🗙			
i i						VEDIC A	DDITION								
ĺ															
		1	0^9	10^8	10^7	10^6	10^5	10^4	10^3	10^2	10^1	10^0			
		1	00	122	113	98	77	75	73	61	32	6			
			13	12	10	8	8	7	6	3					
			3	4	3	6	5	2	9	4	2	6			
								10^14	10^13	10^12	10^11	10^10			
								4	16	36	59	64			
								2	4	6	7	11			
								6	Ø	2	6	5			
					R	esult :	602653	43652942	6						

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