

UNIT-I

VEDIC ARITHMETIC

MAHARAJA AGRASEN UNIVERSITY, BADDI (HP)

SUBJECT: VEDIC ARITHMETIC

SUBJECT CODE: BVAC-200

B.SC. NON-MEDICAL (*IInd* SEM.)

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What is Vedic Arithmetic?

- ❖ Vedic Mathematics is the name given to the ancient system of mathematics which was rediscovered by vedas.
- ❖ It's a unique technique of calculations based on the simple principles and rules, with which any mathematical problem – be it arithmetic, algebra, geometry or trigonometry can be solved mentally.

Why Vedic Mathematics?

- ❖ It helps a person to solve problems 10-15 times faster.
- ❖ It reduces burden (Need to learn tables up to nine only)
- ❖ It provides one line answer.
- ❖ It is a magical tool to reduce scratch work and finger counting.
- ❖ It increases concentration.
- ❖ Time saved can be used to answer more questions
- ❖ Improves concentration.
- ❖ Logical thinking process gets enhanced.

Base of Vedic Mathematics

- ❖ Vedic mathematics now refers to a set of sixteen formulae or sutras and their corollaries derived from vedas.

Sutra	Translation
एकाधिकेन पूर्वेन	By one more than the one before.
निखिलं नवतश्चरमं दशतः	All from 9 and the last from 10.
लघ्वर्ध्वतिर्यग्भ्याम्	Vertically and Cross-wise
परावर्त्य योजयेत्	Transpose and Apply
शून्यं साम्यसमुच्चये	If the Samuccaya is the Same it is Zero
आनुरूप्ये शून्यं अन्यत्	If One is in Ratio the Other is Zero
संकलन व्यवकलनाभ्यां	By Addition and by Subtraction
पूरणापूरणाभ्यां	By the Completion or Non-Completion

EKADHIKENA PURVENA

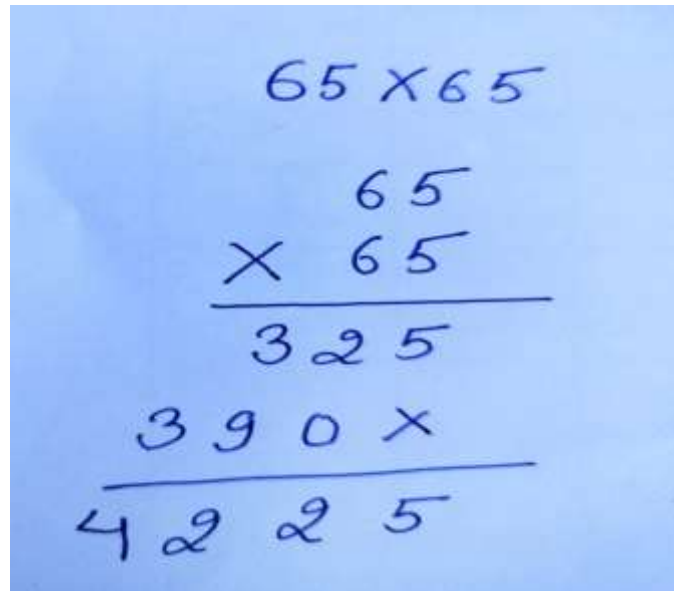
❖ The Sutra(formula)
Ekadhikena Purvena
means:

“By one more than
the previous one”.

❖ This Sutra is
used to the
‘Squaring of
numbers ending
in 5’.

“Squaring of numbers ending in 5”

❖ Conventional Method



A photograph of a handwritten multiplication problem on a light blue background. The problem is 65 multiplied by 65. The first step shows 65 times 5 equals 325. The second step shows 65 times 60 equals 3900. The final result is 4225, obtained by adding 325 and 3900.

$$\begin{array}{r} 65 \times 65 \\ \times 65 \\ \hline 325 \\ 3900 \times \\ \hline 4225 \end{array}$$

❖ Vedic Method

$$65 \times 65 = 4225$$

(‘multiply the previous digit 6 by one more than itself 7. Then write 25)

NIKHILAM NAVATAS'CHARAMAM DASATAH

❖ The Sutra(formula)

NIKHILAM

NAVATAS'CHARAMAM

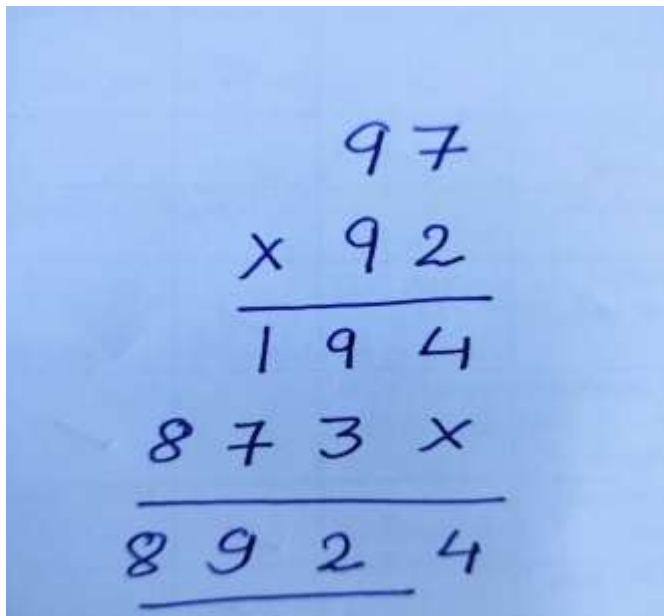
DASATAH means:

“all from 9 and the last
from 10”

❖ This Sutra can be very effectively applied in multiplication of numbers, which are nearer to the bases like 10, 100, 1000 i.e., to the powers of 10 (eg: 96×98 or 102×104)

Case I: When both the numbers are lower than the base.

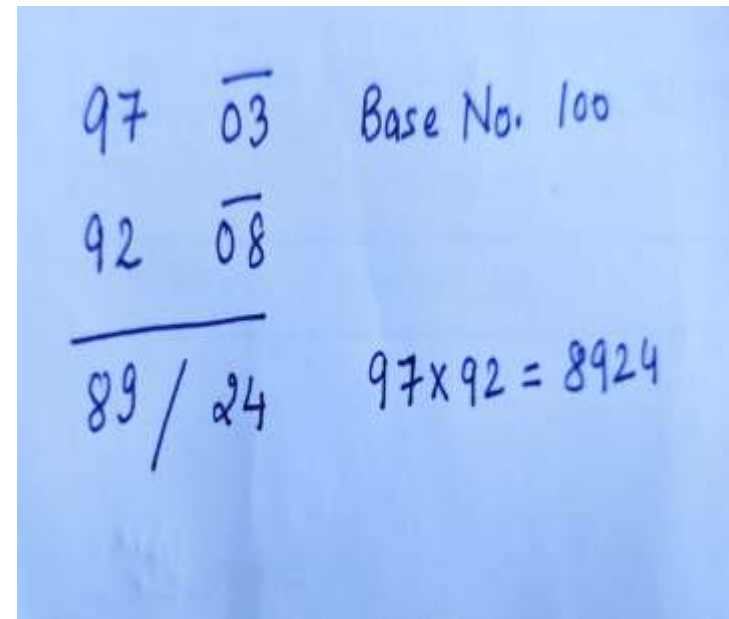
❖ Conventional Method



Handwritten calculation showing the conventional method for multiplying 97 by 92. The numbers are written in a standard vertical format with a horizontal line under the multiplier. The result is 8924.

$$\begin{array}{r} 97 \\ \times 92 \\ \hline 194 \\ 873 \\ \hline 8924 \end{array}$$

❖ Vedic Method



Handwritten calculation showing the Vedic method for multiplying 97 by 92. The numbers are written with a horizontal line over the multiplier. The result is 8924.

$$\begin{array}{r} 97 \quad \overline{03} \\ 92 \quad \overline{08} \\ \hline 89 / 24 \end{array} \quad \begin{array}{l} \text{Base No. } 100 \\ 97 \times 92 = 8924 \end{array}$$

Case II: When both the numbers are higher than the base

❖ Conventional Method

Handwritten calculation showing the conventional method for multiplying 102 and 106 in base 100. The numbers are written as 102 and 106, with 'x' marks indicating the digits are greater than the base. The result is 10812.

$$\begin{array}{r} 102 \\ \times 106 \\ \hline 612 \\ 000x \\ 102xx \\ \hline 10812 \end{array}$$

❖ Vedic Method

Handwritten calculation showing the Vedic method for multiplying 102 and 106 in base 100. The numbers are written as 102 and 106, with '02' and '06' written next to them. The result is 10812.

$$\begin{array}{r} 102 \quad 02 \quad \text{Base No. 100} \\ 106 \quad 06 \\ \hline 108 \quad | \quad 12 \\ \hline 102 \times 106 = 10812 \end{array}$$

Case II: When one number is more
and the other number is less than the
base

❖ Conventional Method

$$\begin{array}{r}
 104 \\
 \times 97 \\
 \hline
 728 \\
 936 \times \\
 \hline
 10088
 \end{array}$$

❖ Vedic Method

$$\begin{array}{r}
 104 \quad 04 \\
 97 \quad \overline{03} \\
 \hline
 101 \quad / \quad \overline{12}
 \end{array}
 \quad \begin{array}{l}
 \text{Base } 100 \\
 (100 - 12 = 88)
 \end{array}$$

10088 Ans.