

**Vedic Mathematics, Science & Technology
Teacher Course**

By Dr. S. K. Kapoor

LEARNING WHILE TEACHING

This day the course focus is upon 'Learning While Teaching'. It four folds aspects being taken up are as follows:

- 85. Learning while teaching
- 86. Recapitulate what has been learnt up-till class 8
- 87. Ganita sutra steps of arithmetic operations
- 88. Square and square roots

The values being covered are to be taught as lessons numbers 85 to 88 to the students of 3-space Vedic Mathematics, Science & Technology.

LESSON-85

LEARNING WHILE TEACHING

1. Naturally, in the scheme of thing, the sequential teaching, aiming to cover the whole range of learning, for beginning to end, about the values of 3-space mathematics, shall be requiring intimate interaction with the terms like, number value 3, solids, 3-space, 3 dimensional frame, artifices of number value 3, representative regular bodies of 3-space, 3-space content, manifestation of 3-space content as volume (domain

fold) of 3-space bodies, the different structural components of solids, different roles of 3-space bodies, transcendence through the manifestation format of 3-space content as domain fold.

2. Also, one shall be confronted with the posers of the applied values of 3-space mathematics, while one would be absorbed for settling the sequence of teaching of values of 3-space mathematics.
3. The applied values projections will bring to mind, the availability of linear order (dimensional fold) spatial geometric envelop (boundary fold), solid domains (volume)/domain fold) and creative origin (4-space as origin fold).
4. Further, the transcendental base (5-space as base) of creative origin 4-space as origin) of solid domain (3-space domain), will also come to pointed attention as to the reach of applied values of 3-space mathematics.
5. Dimension fold manifesting as a dimensional frame of 3 linear axis, in itself will be leading to the frames within which applied values of 3-space mathematics, will express themselves.
6. Spatial boundary as geometric envelop of cube as a set up of 26 structural components, namely 8 corner points, 12 edges, 6 surfaces, will provide a functional format for the applied values reach of 3-space mathematics.
7. Domain fold itself as 3-space content lump will be bringing to focus the domain split spectrum, as well as transcendence phenomenon through domain along its dimensions, and a step ahead along dimension of dimension, and these values add to the applied value mathematics of 3-space.

8. Creative origin (4-space as origin) being a spatial order set up, while solid domain being a linear order set up, and origin fold being of a placement of at centre of the cube, which gets sealed with superimposition of origin of a three dimensional frame, that way will make domain fold as a sealed set up.
9. Sealed 3-space domain brings in a very big volume of applied values.
10. The unsealed state of domain fold brings in the transcendence phenomenon, as a result of which their happen to be a transcendence from linear order 3-space domain into spatial order 4-space domain as its reach up-till solid order 5-space origin of 4-space.
11. This transcendence phenomenon, as well brings in a very big range of applied values of 3-space mathematics.
12. A step ahead, the transcendental base (solid order 5-space base) of creative origin (spatial order 4-space origin) is a lively reservoir of applied value 3-space mathematics.
13. These features as these are bring to focuses the 5 different roles, firstly as domain fold, secondly as dimension fold, followed by roles as of boundary fold, origin fold and base fold.
14. These features permit depiction as 5x5 grid / matrix as under:

-1	0	1	2	3
0	1	2	3	4
1	2	3	4	5

2	3	4	5	6
3	4	5	6	7

15. One shall re-capitulate as to how one had learnt, comprehend and imbibed above features while taking this course.
16. One shall further re-capitulate as to how one had learnt more about features while teaching above features.
17. This comparative index of learning at two phases, while taking the course and while teaching values learnt during the course, will be bringing oneself face to face with one's own learning process at two phases of learning and teaching.
18. One shall regularly evaluate oneself about one's learning and in-terms there off one shall update of one's dictionary of 3-space Vedic Mathematics.



LESSON-86

RECAPITULATE WHAT HAS BEEN LEARNT UPTILL CLASS 8

1. Focus up-till class 8 has been, primarily upon arithmetic.
2. Focus upon arithmetic, as well as, up-till class 8 has been upon four basic arithmetic operation, addition, subtraction, multiplication and division.
3. These basic four operations, on their visit and reach in terms of Ganita Sutras, the number of working steps gets reduced to minimum, and as a result to computation

has become much convenient. Further, the chase of these operations upon the numbers organized along ten place value system provided much incite about the way digits were becoming parallel to coefficients of corresponding polynomials of a single variable, with the variable itself going parallel to ten place value systems. Variable symbol X and number value 10 (with parallel expression X) makes the things more blissful.

4. This, as such, has brought us face to face with the algebraic format for arithmetic operation.
5. During this year course, we shall acquiring incite as to geometric format for algebra and arithmetic.
6. This unified format of geometric, algebra and arithmetic as also be potentiality to provide simultaneous unified format approach for calculus, measure theory and topology as well.
7. It would further also lead to the disciplines of manifestation and transcendence at the base of geometric format itself.
8. This way, it would be blissful that we shall revisit the basic arithmetic operation and to acquire further deeper inside about the values of the potentiality of arithmetic operations facilitating algebraic, geometric and other computation of the domain of calculus measure theory, topology, as well as the permissible chase of manifestation and transcendence phenomenon along artifice of number and dimensional frames running parallel to each other.
9. The synthesis of dimensions and dimensional frames, as well as the transcendence through domain, and the domain split spectrum, as well, are permitting efficient chase along artifices of number, which go parallel to

dimensional frames, and there by mathematics operations get fully unified.



LESSON-87

GANITA SUTRA STEPS OF ARITHMETIC OPERATIONS

One shall re-capitulate, re-visit and to re-chase Ganita Sutra steps for applications of arithmetic operations of the following illustrative situation being preserve and demonstrated with focus in the Vedic Mathematics book of Swami Bharti Krishna Tirtha Ji Maharaj.

(i) Working rule of Ganita Sutra 1

(ii) $1/19, 1/29, 1/49,$

$1/19 =$

$1/29 =$

$1/49 =$

(iii) Working rule of Ganita Sutra 2

(iv) Working rule of Ganita Sutra 3

(v) Working rule of Ganita Sutra 4



LESSON-88

SQUARE AND SQUARE ROOT

1. General Quadratic (2nd degree) polynomial, single variable is of the expression:

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$$Ax^2 + Bx + C$$

2. Coefficient triples A, B, C, permit expression as 'ABC'.
3. This expression 'ABC' becomes the value 'ABC' of X-placement value system with 'ABC' being the values of numerals of X place value system.
4. Illustratively number value 312 of ten place value system will permit its expression in quadratic polynomials for $X = 10$ and 3, 1, 2 as values of the numerals of ten place value system, as:

$$3(10^2) + 1(10^1) + 2$$
5. The composition of quadratic equation $AX^2 + BX^1 + CX^0 = (ax^1 + bx^0)x(cx^1 + dx^0)$ give us the algebraic format for squaring and square root of the numbers when $a = c$ and $b = d$.
6. The working rule of Ganita Sutra 3: 'vertically and crosswise' helps us reach at the product value $(ax^1 + bx^0)x(cx^1 + dx^0)$.
7. The reverse steps of above process help us reach at the square root of the quadratic polynomial $AX^2 + BX^1 + CX^0$.
8. The above direct and reverse steps can be computed mentally. The basis of these calculations for reach at the squares or square roots, and the roots of the quadratic equation can be chased.