

VEDIC MATHEMATICS, SCIENCE & TECHNOLOGY TEACHER COURSE

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TEACHING ON FIRST PRINCIPLE

This day the course focus is upon ‘teaching on first principle’. It four folds aspects being taken up are as follows:

- 73. Ganita Sutra 1 and Ganita Upsutra 1
- 74. Source Sutras and Source Upsutras
- 75. Teaching from the very beginning on first principal
- 76. Practical demonstration exercises of working rule of Ganita Sutra

The values being covered are to be taught as lessons numbers 73 to 76 to the students of 3-space Vedic Mathematics, Science & Technology.

LESSON-73

GANITA SUTRA 1 AND GANITA UPSUTRA 1

1. With the help of Ganita Sutra 1 and Ganita Upsutra 1, one shall reach at sequential arrangements for values.
2. First of all, one may pose to oneself the similarity and dissimilarity of feature and value in respect of the formulation of following setup:
(One, first, single, sole, lone, along, lonely, oneness ...).

3. Further, one shall glimpse and imbibe the similarity and dissimilarity of following values setups:
 $(1, 1^0, 1^1, 1^{-1}, 1/1, 2/2, 3/3, (N \times M) / (N \times M), (N \times 1) / 1 \times N) \dots$.
4. To number the milestones, to number the roads, to roles out roll numbers ...
5. To sequential, polygons, to sequence cuecue.
6. To sequence variables and degrees of equations.
7. To sequence grids.
8. To sequence place value system.
9. To sequence geometric bodies, dimensional spaces, dimensional frames.
10. To construct a scale, to number thermometer, to construct measuring rods, to have numbers line, to have timeline, to sequence life span.
11. To distinguish unit length, unit area, unit volume.
12. To organized dictionary to prepare library catalogue of books.
13. To sequence numbers tables.
14. To sequence numerals.
15. To sequences finite strings.
16. To sequences infinite sequence of infinite sequences.
17. To sequentially unfold osculate.
18. To parallel sequence linear order and negative linear order.



LESSON-74

SOURCE SUTRA AND SOURCE UPSUTRA

1. Ganita Sutra 1 (Ekadhikena Purvena) is the source sutra and Ganita Upsutra 1 (Anurupyena) is the source upsutra.

Ganita Sutra-1 एकाधिकेन पूर्वेण

SN	1	2	3	4	5	6	7	8	9
Letter	ए	क्	आ	ध्	ठ	क्	ए	न्	ट
TCV	6	1	2	7	2	1	6	8	1
SN	10	11	12	13	14	15	16		
Letter	प्	ड	र्	व्	ए	ण्	अ		
TCV	5	6	3	7	6	7	1		

Upsutra – 1 आनुरूप्ये

SN	1	2	3	4	5	6	7	8	9	10
Letter	आ	न्	उ	र्	ऊ	प्	य्	ए	ण्	ट
TCV	2	8	3	3	6	5	1	6	7	1

2. Simple English Rendering of the working rule of Ganita Sutra 1 (Ekadhikena Purvena) is ‘one more than before’, and the simple English rendering of the working rule of

Ganita Upsutra 1 (Anurupyena) is 'to follow values proportionally'.

3. Ganita Sutra 1 leads to 'sequential ordering' of values of numbers and formats of bodies. And Ganita Upsutra 1 settles the rule of symmetry as of 'steps of following the forms as are framed'.
4. 'Sequential ordering of values of numbers and of geometric formats of bodies', and 'the steps of structural organization of forms as are framed', together lead to the processing steps of Vedic systems steps, including that of Vedic Mathematics, in general, and Vedic arithmetic, in particular.
5. Ganita Sutra 1 and Ganita Upsutra 1, together are the source values of processing steps of Vedic Mathematics.
6. The working rule 'one more than before' of Ganita Sutra 1, helps us reach numbers values sequence '1, 2, 3, 4, ----', and the emerging sequential ordering format of these values, with the help of the working rule of proportionately symmetrical values sequence, leads to the sequentially repeated values steps, bringing us face to face with:
 - (i) 'one, two, three, four, ---
 - (ii) 'single, double, triple, quadruple, ---
 - (iii) 'first, second, third, fourth, ---
 - (iv) 'firstly, secondly, thirdly, fourthly, ---
 - (v) '(one), (one and two), (one, two and three), (one, two, three and four),---
 - (vi) (1, 1+2, 1+2+3, 1+2+3+4, ---) and
 (1, 1 x 2, 1 x 2 x 3, 1 x 2 x 3 x 4---), and like that
 1, 2, 3, 4, 5, ---
 2, 3, 4, 5, 6, ---
 3, 4, 5, 6, 7, ---
 4, 5, 6, 7, 8, ---

- -- -- --
- (vii) (point, line, surface, solid, hyper solid 4, hyper solid-5, hyper solid-6, ---)
 - (viii) (0-space body, 1-space body, 2-space body, 3-space body, 4-Space body, ---)
 - (ix) (0-space, 1-space, 2-Space, 3-Space, 4-Space, ---)
 - (x) (single dimension, double dimensions, triple dimensions, quadruple dimensions, ---)
 - (xi) (first axis, second axis, third axis, fourth axis, ---)
 - (xii) (linear order, spatial order, solid order, creative order, ---)
 - (xiii) (Liner boundary, spatial boundary, solid boundary, creative boundary, ---)
 - (xiv) (Length, area, volume, hyper volume-4, hyper volume-5, ---)
 - (xv) (Linear origin, spatial origin, solid origin, creative origin, ---)
 - (xvi) (Single variable, double variable, triple variable, quadruple variable, ---)
 - (xvii) (Linear equations, quadratic equations, cubic equations, creative power equations, ---)
 - (xviii) (1 x 1 grid, 2 x 2 grid, 3 x 3 grid, 4 x 4 grid, ---)
 - (xix) (1, 1 x 1, 1 x 1 x 1, 1 x 1 x 1, ---)
 - (xx) (1/1, 1/2, 1/3, 1/4, 1/5, ---)

7. Ganita Sutra 1 and Ganita Upsutra 1, together further bring us face to face with very rich spectrum of domains reach, illustratively
- (i) Interval as $(x+2)^1$, Square as $(x+2)^2$, Cube as $(x+2)^3$, ---

- (ii) Total choices from (1, 2, 3, 4, ---N) for summation value n is 2^{n-1} for values of $n = 1, 2, 3, 4, \dots, n, n + 1, \dots$.
- (iii) Triangle, Rectangle, Pentagon, Hexagon, ---
- (iv) Interval has two end points, square as four boundary lines, cube has six surface plates, hyper cube 4 has solid boundary of eight components, hyper cube 5 has creative boundary of ten components, ---.
- (v) Interval as one space body as dimensional frame of single dimension, Square as two space body as dimensional frame of two dimension, Cube as three space body as dimensional frame of three dimension, ----
- (vi) (-1 space plays the role of dimension of 1-space), (0-space plays the role of dimension of 2-space), (1-space plays the role of dimension of 3-space), ----
- (vii) Interval is hyper cube 1 of four folds (-1 space, 0 space, 1 space, 2 space); Square is hyper cube 2 of four folds (0 space, 1 space, 2 space, 3 space); Cube is hyper cube 3 of four folds (1 space, 2 space, 3 space, 4 space); ----
- (viii) 1 as 1 leads to (1, 2, 3, 4, ---), 2 as 1 leads to (2, 4, 6, 8, ---), 3 as 1 leads to (3, 6, 9, 12, ---), ----
- (ix) Right angle triangles (3, 4, 5), (6, 8, 10), (9, 12, 15), ---
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- (x) Right angle triangles (3, 4, 5), (5, 12, 13), (13, 10, 17), ---

8. Ganita Sutra 1 and Ganita Sutra 2 together lead to Ganita Sutra 2 and Ganita Upsutra 2 of values formats ten place value systems, and all other place value systems.
9. Ganita Sutra 1 and Ganita Sutra 2 lead to association of values for alphabet letters A to Z as:

A = 1, B = 2, C = 3, D = 4, E = 5, F = 6,
G = 7, H = 8, I = 9, J = 10, K = 11, L = 12,
M = 13, N = 14, O = 15, P = 16, Q = 17, R = 18,
S = 19, T = 20, U = 21, V = 22, W = 23, X = 24
Y = 25, Z = 26.

These associated values 1 to 26 of alphabet letters A to Z, in that sequence and order may be taken as the numbers values formats (NVFs) of the alphabet letters. It may be expressed as NVF (A) = 1, NVF (B) = 2, --- NVF (Z) = 26,

10. Further Ganita Sutra 1 and Ganita Upsutra 1 will help us reach at the association of following values with different groups of letters of Devnagri alphabet, to be designated as transcendental code values of these letters.

DEVNAGRI ALPHABET FORMAT

Transcendental code values format

Vowels

Letter	अ	इ	उ	ऋ	ॠ	ए	ओ	ऐ	औ
TCV values	1	2	3	4	5	6	7	8	9

Consonants

Letters	क	ख	ग	घ	ङ
---------	---	---	---	---	---

TCV values	1	2	3	4	5
------------	---	---	---	---	---

Letters	च	छ	ज	झ	ञ
---------	---	---	---	---	---

TCV values	2	3	4	5	6
------------	---	---	---	---	---

Letters	ट	ठ	ड	ढ	ण
---------	---	---	---	---	---

TCV values	3	4	5	6	7
------------	---	---	---	---	---

Letters	त	थ	द	ध	न
---------	---	---	---	---	---

TCV values	4	5	6	7	8
------------	---	---	---	---	---

Letters	प	फ	ब	भ	म
---------	---	---	---	---	---

TCV values	5	6	7	8	9
------------	---	---	---	---	---

Other letters

Letters	य	व	र	ल
---------	---	---	---	---

TCV values	1	3	5	7
------------	---	---	---	---

Letters	श	स	ष	ह
---------	---	---	---	---

TCV values 2 3 6 9

Letters • ँ ए ऌ ऍ ऎ ए ऐ ॐ

TCV values 9 10 11 12 13 14 15 16

Thy synonym is *Parnava*.

(*Tasey Vachka Parnava*) प्रणवः

TCV value (प्रणवः) = 36

11. It would be a blissful exercise to sequentially reach at the transcendental code values of the letters of the text of Ganita Sutra 1 of reach as follows :

Ganita Sutra-1
एकाधिकेन पूर्वेषु

1	2	3	4	5	6	7	8	9
ए	क्	टा	ध्	इ	क्	ए	न्	अ
10	11	12	13	14	15	16		
प्	उ	र्	व्	ए	ण्	ट		

12. It would further be a blissful exercise to sequentially reach at the transcendental code values of the letters of the text of Ganita Upsutra 1 of reach as follows :

Ganita Upsutra – 1

आनुरूप्ये

1	2	3	4	5	6	7	8	9	10
आ	न्	उ	र्	ऊ	प्	य्	ए	ण्	ट

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LESSON-75

TEACHING FROM THE VERY BEGINNING ON FIRST PRINCIPAL

1. Teaching from the very beginning on first principal is a very fine art.
2. Ganita Sutras mathematics preserves multi-layered format and teaching about it, naturally is going to be of sequential steps.
3. These being so one shall be ever conscious, as to and which functional layer of the format of Ganita Sutras, one is working out particular mathematical operations.
4. Ganita Sutra 1, being the source sutra, as such, its values shall be fully imbibed.
5. Likewise Ganita Sutra 1, being the source upsutra, its values as well shall be fully imbibed.

6. Values pull of Ganita Sutra 1 and Ganita Upsutra 1 is the ultimate values reservoir of mathematics of Ganita Sutra and upsutras.
7. The learning and teaching of mathematics of Ganita Sutra and upsutra, as such would get indexed in terms of pure and applied values of above reservoir of mathematics values.
8. Conceptual reach at mathematical values, and also at mathematics entity like number on body and mathematical tools like measuring rod at sequential ordering, as well are settled in-terms of the values of above reservoir.
9. As such pure and applied value of 3-space mathematics, as basis base of 3-space Vedic Mathematics, Science & Technology are to be comprehended and imbibed in terms of the feature of above reservoir of values.
10. Accordingly, learning and teaching of 3-space mathematics is to be indexed with the above reservoirs of values which sequentially unfolds and manifests as Ganita Sutras 1 to 16 and Ganita Upsutra 1 to 13. The sequential organization of working rules of Ganita Sutras and upsutras are to be learned and to be taught in the sequence and order of Ganita Sutras and Ganita Upsutras .
11. It would be a blissful exercise to sequentially reach at the manifestation of cube as hyper cube 3 as a four folds manifestation layer (1, 2, 3, 4) by sequential approaching of working rule of Ganita Sutra 1 and Ganita Upsutra 1.
12. The linear dimension fold, along 3 different version of an interval will lead to unified format for arithmetic, algebra, geometry, calculus, measure theory, topology, manifestation, transcendence mathematics.

13. The spatial boundary at spatial order origin will lead to simultaneous parallel outer expansion, as well as inner expansion transition and transforming from linear order 3-space to spatial order 4-space.
14. Domain fold, creative origin and transcendental base will further add to the richness of pure and applied of 3-space as 3-space being domain fold, boundary fold and dimension fold.
15. All these values shall be learnt and to be taught and the basis base 3-space mathematics of 3-space Vedic Mathematics, Science & Technology shall be availed for the richness off of our existence phenomenon parallel to Tri-Loki being sustained by Tri-Murti.



LESSON-76

PRACTICAL DEMONSTRATION EXERCISES OF WORKING RULE OF GANITA SUTRA

1. **One to one correspondence**
One to one correspondence to be demonstrated
 - (a) Between the points of two intervals
 - (b) Between interval segments of a pair of lines.
 - (c) Between points of a pair of planes.
 - (d) Between surface segments of a pair of planes.
 - (e) Between points of a pair of cubes.
 - (f) Between segments of a pair of cubes.
2. Shift of pebbles from one jar to another jar

- (a) Pebbles of a given jar be picked up one by one from the given jar and same be put into another jar.
 - (b) From a given jar pebbles be picked up in pairs, one by one, and the same be put up in another jar.
 - (c) Pebbles picked up on triples, from a given jar, one by one, and same be put in another jar.
 - (d) Pebbles be picked in quadruple in a given jar, one by one and same be put up in another jar.
3. Two sequentially number
- (a) Houses along the left side of a given street.
 - (b) To a lot roll numbers to the students of a class.
 - (c) To number mile stone along a role connecting village a with village b.
4. Binary picks
- (a) To have a pick of one coin from part A and one coin from part B and put and to have a pick of a coin of combined value of said 2 coins of 2 parts, from the third part.
 - (b) Pick one coin from part a and one coin from part B and to put both pick coins into part C. and to repeat this picking up exercise five times.
 - (c) Pick up two natural numbers, add the same and put the added value number along a number line.
 - (d) Pick a number from number line A and to put the same along another number line. Repeat this exercise five times.
 - (e) Pick one '1' from the numbers range (1, 2, 3, 4, 5, 6) and to sequentially reach at (2, 3, 4, 5, 6).
 - (f) Count the pebbles of a given jar by sequentially attaching numbers values 1, 2, 3, 4, ... to the first, second, third, fourth and so on picks of the pebbles in sequential steps from the given jar.

- (g) Pick up a number N from the number line A and further to pick up number M from the another given number line B . ■