**List of VM Consolidated documents of Dr. S. K. Kapoor**
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# V.M. Teachers' Manual

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# V.M. Teachers' Manual

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## I

## ABOUT PRESENT V.M.TEACHERS' MANNUAL

1. This manual is centered around Vedic Mathematics ( V.M.) Teaching responsibilities of V.M.Teachers.
2. This responsibility is centered around " The Natural Growth of Intelligence Field within young minds" .
3. And to fulfil the intelligence field with values and virtues, the focus is to ensure that the intelligence field so fulfilled is sustained by the consciousness state of human mind.
4. Consciousness state of human mind is of compactified organization which is inherently potentialised to sequentially unfold itself .
5. This unfolding is of a range of 7 states of consciousness.
6. These 7 states of consciousness are :
   - i) Jagrat Avastha ( Waking state)
   - ii) Swapan Avastha ( Dream state)
   - iii) Sushakti Avastha ( Deep Sleep state).
   - iv) Turiya Avastha ( Cosmic State).
   - v) Turiya Ateet Avastha ( Transcendental state)
   - vi) Deviya Avastha ( godily state).
   - vii) Akey Avastha ( unity state).
7. Vedic systems organized whole range of knowledge as of human mind comprehension range parallel to sustainability of human intelligence by consciousness state.
8. With it, the knowledge, as of its pure values, goes natural and further goes parallel to Ashtprakarti ( 8 fold nature) .

9. Ashtprakarti ( 8 fold Nature) of its own goes transcendental , and in the process Nature becomes Chetan Prakarti ( Self Referral conscious nature).
10. Here, the Mind ( Manus) transforms as ***CHIT*** **(** consciousness lively self interacting phenomenon for consciousness and for sustained intelligence upon this consciousness format).
11. CHIT ( a transformed state of mind) inherently gets enveloped five fold ( Panch Vritiya).
12. These five folds are hard and soft ; 3 of the five folds are hard and remaining 2 are soft.
13. Transcendence there from makes a Kaivalya state.
14. It is this natural state of Nature, (Ashtprakarti ) of value " 8" is the chase initiation point of Sadhakas and students of Vedic Mathematics, Science & Technology ( VMS&T) and of adhiyatam vidya ( spiritual life) .
15. The emerging reach of such initiation is of Brahaman domain ( Nav Braham) of value "9"
16. And also as of the reach of Paar Braham domain of value 10.
17. These values ranges are of sequential progression of range of values " 8,9,10" .
18. This progression presumes the previously attained range of consciousness state range of 7 steps of values range ( 1,2,3,4,5,6,7) .
19. This values range ( 1,2,3,4,5,6,7) has a parallel 6 steps long range of gaps.
20. This, as such is of parallel format of 7 points coverage and 6 units coverage being of equal reach .
21. This is the manifestation process, which sequentially being of the reach from points to lines, from lines to surfaces and further from surfaces to solids, as such is a 4 steps process of manifestation .
22. This 4 steps manifestation process is of the range of 4 consecutive values quadruple ( 0,1,2,3) which is further

parallel to synthetic manifestation of 4 consecutive space contents viz . of ( 0 space content lump, 1 space content lump, 2 space content lump and 3 space content lump.

23. It leads to a four fold manifestation layer format .
24. 4 folds are ( dimension fold, boundary fold , domain fold , origin fold).
25. This format is parallel to the features of idol of Lord Brahma , 4 Head Lord, Creator of the Supreme, who sits gracefully on the lotus seat of 8 petals and meditates upon the transcendental seat within cavity of His own heart and with the grace of transcendental Lord, Lord Shiv , the 5 Head Lord with 3 eyes in each head, Lord Brahma multiplies as 10 Brahamas.
26. Along this format the manifestation range of 6 gaps of values range ( 1,2,3,4,5,6,7) parallel to 7 consciousness states is the four fold manifestation layers emergence as of manifested format of hyper cubes 1 to 6.
27. This emerging format is designated and is known as Sathapatya Measuring Rod.
28. Sathapatya Measuring Rod, as such is a synthetic set up of hyper cubes 1 to 6.
29. This measuring rod is presided by Lord Vishnu , the over lord of real 6 space.
30. The measure of this measuring rod is presided by Lord Brahma , Creator of the Supreme.
31. Along this format flows, transcendental features of transcendental domain ( 5 space) presided by Lord Shiv , 5 Head Lord being equipped with 3 eyes in each head and having 15 long arms and within the cavity of His heart, being the seat of Lord Vishnu, while the Shivlok ( 5 space ) is enveloped by creative boundary ( 4 space as boundary ) of 10 components as the formats of idols of Lord Brahma.
32. Vedic Mathematics Teachers responsibility that way is to teach Vedic Mathematics, the Vedic way .

33. Vedic systems approach, whole range of knowledge in terms of a pair of established processes designated and known as Yoga Nishta and Sankhya Nishta.
34. Yoga Nishta presumes the existence of artifices of numbers and avails dimensional frames.
35. On the other hand, Sankhya Nishta presumes the existence of dimensional frames and avails the artifices of numbers.
36. This brings to focus as that Vedic systems presumes simultaneous manifested existence of artifices of numbers as well as of dimensional frames.
37. This leads to the simultaneous existence of 9 numeral range and 6 hyper cubes range.
38. Hyper cubes are of four fold manifestation layers ranges.
39. These four folds are the manifested states of respective dimensional spaces.
40. This way four folds manifestation layer of ( 1 space content, 2 space content, 3 space content, 4 space content) accepts parallel values quadruple ( 1,2,3,4).
41. This reach as of hyper cube 1 of linear dimensional order ( 1 space in the role of dimension ) is as of quadruple values ( 1,2,3,4) reach.
42. That way hyper cubes 1 to 6 shall be leading us to sequential range of 6 quadruple values namely :
    *i)* 1,2,3,4 ii) 2,3,4,5 iii) 3,4,5,6 iv) 4,5,6,7 v) 5,6,7,8
    vi) 6,7,8,9
43. The transcendence at the origin fold will extend these quadruple values ranges into 5 fold transcendence ranges as :
    *i)* 1,2,3,4,5 ii) 2,3,4,5,6 iii) 3,4,5,6,7 iv) 4,5,6,7,8 v) 5,6,7,8,9
    vii) 6,7,8,9,10.
44. With it Vedic systems re-arrange themselves as of parallel reach format of values range ( 1,2,3,4,5,6,7,8,9,10) and as

of Sathapatya Measuring Rod of synthetic set up of hyper cubes 1 to 6 as four fold manifestation layers permitting transcendence as origin folds.

45. It is this re-organised formats of Vedic systems which are to be availed for chase of Vedic Mathematics, Science & Technology features, values and virtues.
46. Along this format is to be chase of Vedic Mathematical processing steps of Vedic Mathematical domains chase of Ganita Sutras.
47. The self referral features of this system will further help us reach back from Ganita Sutras mathematical domains processing steps to Vedic systems chase of Vedic knowledge.
48. Vedic Mathematics Teachers responsibility, that way is of the order of the reach of Vedic knowledge to Ganita Sutras and also from Ganita Sutras to Vedic knowledge.
49. This naturally requires knowledge and practice, the Vedic systems way.
50. With it, the natural emergence of institutionalize need for orientations and training of Vedic Mathematics Teachers.
51. This as a step ahead will focus upon the sequential teaching steps of the expectations of the responsibility of Vedic Mathematics Teachers.
52. This will further bring us face to face with the requirement of settlement of graded text books by the experts in an and with in institutional frame.
53. With it comes to focus the earmarking of sequential research projects.
54. And above all there should be standardization of evaluation system of the Vedic Mathematics values claimed to be imbibed by students, teachers, research scholars.
55. Moreover as the Discipline of Vedic Mathematics, Science & Technology having been in a dormant state for a few last

centuries, as such lively revival of the same will put us on simultaneous “learning and teaching” path.

56. This being so, this manuals focus is upon this “ Learning and Teaching” methodologies within an aim to reach at the lively revival of the ancient wisdom discipline of Vedic Mathematics, Science & Technology as a lively system of full availability of entire range of pure and applied values of ancient wisdom and enlightenment for the natural existence of humanity on the Earth.

## II
## TO LEARN AND TEACH PATH METHODOLOGY

1. Discipline of Vedic Mathematics, Science & Technology is an ancient wisdom.
2. This discipline is dormant for a few last centuries.
3. To make it a lively discipline, we have to approach it along the format of learning and teaching format .
4. Methodology of this learning and teaching format is essentially of sequential progression steps.
5. Ganita Sutra 1 Ekadhikena Purvena working rule accepts simple English rendering as “ One more than before”.
6. This rule inherently is of the feature of sequential progression.
7. The sequential progression range of steps get coordinated and organized as of the reach by way of having one step more at a time.
8. This in a way, at every step, presumes the attainment uptil the previous step.
9. The availability of attainment uptil a previous step, as such puts at the step of his attainment while the student is at steps prior to the attainment step of the teacher.
10. A teacher at step 1, will naturally be in a position to guide and teach one who is at the zero stage.

11. The sequential attainment reach of the teacher at Step 2 can guide and teach the student who is still at Step 1 .
12. This sequential step methodology puts whole range of learners as senior and junior sadhakas " Seekers of knowledge".
13. Junior sadhakas can look to senior sadhakas for guidance and teaching.
14. Senior sadhakas can guide and teach junior sadhakas.
15. The learning and teaching process will continue .
16. This format of learning and teaching is equally available for schooling system of any discipline of knowledge.
17. It is more effective for the disciplines which are in dormant state and are in the process of acquiring lively state.
18. At present, the discipline of Vedic Mathematics, Science & Technology can be put in this category of dormant state at the threshold of initiation for to be in to a lively state.
19. The full reservoir of Vedic knowledge is there with us in the form of Vedic Samhitas and other allied literature.
20. Of the Vedic Samhitas, as well, Sankla Rigved Samhita, as the oldest book of mankind, is well preserved with us from its first syllable to its last $432000^{th}$ syllables.
21. And, as the traditional claims go, the whole range of Vedic scriptures can be enlivened in terms of the Vedic systems seeds preserved here in this reservoir of values of Sankla Rigved Samhita itself .
22. The values of this reservoir, as such, are in such state for the present generation, which may put it as the same being in a dormant state.
23. There is a big range of dormant state format of reach from Sankla Rigved Samhita to Atharv Ved Ganita Sutras.
24. The whole range from Atharv Ved Ganita Sutras to Sankla Rigved Samhita is at the threshold of to be enlivened for its values, pure and applied, in their natural state for their availability for us for enrichment of our existence phenomenon.

25. This urge to enliven it would require that we shall put ourselves along the path of learning and teaching.
26. Swami Bharti Krishna Tiratha Ji Maharaj has already covered initial steps by first settling the meditation methodology of Vedic systems as the methodology for sequential progression for initial steps of chase of working rules of Ganita Sutras.
27. Once the initial steps attainment alongwith the methodology to follow for reaching at the values of Ganita Sutras is there with us, as are of tested results reached at by Swami Bharti Krishna Tiratha Ji Maharaj then all what we have to do is to sequentially carry the processing thread ahead as a learning and teaching as of a learning and teaching path format .
28. All what has already been attained and preserved for us by Swami Bharti Krishna Tiratha Ji Maharaj can be learnt and to be taught by the Vedic Mathematics Teachers.
29. The junior sadhakas shall learn of their own, as well as from, and with the help of senior sadhakas while the senior sadhakas shall follow the meditation methodology and continue reaching at further inner fold values of mathematical domains of Ganita Sutras.
30. This methodology of reach at inner fold values of mathematical domains of Ganita Sutras, is going to be parallel to the unfolding process of consciousness and consequential emergence of a range of seven states of consciousness.
31. It is this sequential reach progression which shall be the further augmentation of learn and teach path and it would transform into the methodology to meditate and practice, and the unfolding process will continue with ensured reach of transcendence path leading to Kaivalya state and thereafter to Ashtprakarti state and to Brahman domain and even to Par-Braham.
32. The learn and teach path of sequential steps is fountained by the working rule of Ganita Sutra 1 .

33. And in terms of this very rule itself, is going to be the internal sequential unfolding of Ganita Sutra 1 itself as well.
34. This will make whole processing system as a sequential self referring process.
35. The text of Ganita Sutra 1 is sequentially organized as a range of 16 letters with each letter having its distinct sequential placements as first, second, third and so on uptil $16^{th}$ placement for the $16^{th}$ letter of the text of Ganita Sutra 1.
36. This $16^{th}$ steps long unfolding steps of the self referral processing technique will as a step ahead, shall be helping us visualize, realize and to glimpse the inter co-related and coordinated organization format of the text of 16 Ganita Sutras going parallel to the coordinative organization of the text of 16 letters as per their placement of the range of values ( 1,2,3 and so on) uptil 16 being of first, second, third and so on uptil $16^{th}$ placements
37. This reach for the placement of 16 letters of the text of Ganita Sutra 1 parallel to the placement of values 1 to 16 as a range ( 1,2,3,----------), 16.
38. A step ahead it shall be bringing us face to face with the above emerging sequential placement features to be parallel to the sequential placement features of Ganita Sutras 1,2,3, and so on uptil Ganita Sutra 16 in the text of Ganita Sutras (16 in numbers).
39. It would lead to the sequential coordination, inter-relationship and parallel organization features, values and virtues for

i) No. 1, first letter of text of Ganita Sutra 1 and Ganita Sutra 1 itself.

ii) No.2, second letter of Ganita Sutra 1, and Ganita Sutra 2.

iii) $3^{rd}$ letter of Ganita Sutra 1 and Ganita Sutra 3.

iv) And so on

xvi) No. 16 ,$16^{th}$ letter of Ganita Sutra 1 , Ganita Sutra 16.

40. It is this organization feature of sequential progression and parallel sequential progression and of internal and external sequential progression, which shall be making the different features of learning and teaching path format.
41. The simultaneous sequential progression, in its internal and external aspects deserves to be comprehended well.
42. Let us have a pause here .
43. Ganita Sutra 1 as an organization of 16 letters is its internal progression of 16 steps.
44 Ganita Sutras 1 to 16 is the external progression vis-à-vis Ganita Sutra 1 .
45. However, 16 sutras as Ganita Sutras text is the internal organization with each sutra being the constituent step.
46. Then in this reference , the internal progression of Ganita Sutra 1 itself as of 16 steps will go a step ahead making it Ganita Sutra 1 differentthan its internal constituent which would be further different than Ganita Sutras themselves as components.
47. Let us have a pause here and take note that Ganita Sutra 1 as of 16 letters, and Ganita Sutras text of 16 sutras makes an organization of internal and external progression format as of value 16 x 16 = 256.
48. Let us have a pause here and take note that value 6 as of first digit place and value 25 as of places ahead, bring us face to face with that value 6 is associated to Lord Vishnu and value 25 as well is associated to Lord Vishnu .
49. It is here where we have to learn and teach this organization feature .
50. It will take us to the geometric format and parallel transcendental code values format associated with the individual letters of the words formulation as well as with the word formulation itself as well with formats of letters being the internal constituentwise progression.
51. The aspect of association of geometric format and transcendental code values with individual alphabet letters and

words formulation to be taken up in the subsequent aspect of this manual.

52. However here It would be relevant to note that $16 \times 16 = 16^2$ while 16 itself is of organization format $16 = 4^2$
53. And a step ahead $4 = 2^2$.
54. Here it also would be relevant to take note that $4^2 = 2^4$.
55. still further as that $4 = 2+2 = 2 \times 2 = (-2) \times (-2)$
56. And a step ahead $0 = 0+0 = 0 \times 0 = (-0) \times (-0)$.
57. One may have a pause here and take note that the triple features inrespect of value 4 as well as of value 0 having super imposition of addition and multiplication as well as of pair of opposite orientation are there in both cases as per above split but at the same time there are also glaring differences as much as that in case of value 4 the addition, multiplication and pair of orientation feature is with respect to value "2" while incase of value 0 these values are of value "0" itself.
58. These all features deserve to be learnt and to be taught.
59. Here in the context, it also is to be learnt and taught as that " 0" is a whole number and as such is an entity and it accepts cardinality value 1 like that of value 1 itself or any number
60. With 0 and 1 both being of cardinality 1 , will make them cardinality-wise equal, despite they being distinct for their values.
61. This will bring us face to face with association of value 1 with sole syllable Om.
62. Om that way accepts association of value 1 .
63. Further as that Om is a composition of component 4 in number.
64. That way Om, component-wise, accepts number value 4.
65. Still further as that the expression chase along spatial format will associate value $4 \times 4 = 16$.
66 Still further as that $4 = 1+1+1+1$ and $10 = 1+2+3+4$.
67. These features of sequential unfolding of sole syllable Om as 1, 4,16 and also as 10 deserve to be comprehended and to be imbibed.

68. Now taking zero as well of cardinality 1 then cardinality-wise all the above features of unfolding process as of quadruple steps ( 1, 4,10,16,10) will be available for number value entity " 0" or "1" or "2" or may it be any other value.
69. These all features deserve to be learnt and to be taught.
70. These all are sequential progression steps of internal and external unfolding processes.
71 These internal and external progression processing steps are inherently imbedded in the organization format of Ganita Sutras and as such reach at the mathematical processing steps of mathematical domain of Ganita Sutras individually and collectively are to be learnt sequentially and accordingly the same are to be taught sequentially for their proper appreciation and thorough imbibing.
72. This that way adds to be responsibility of the Vedic Mathematics Teachers.
73. It as a step ahead adds to the responsibility of teachers trainers and experts.
74. Simultaneously it adds the responsibility of the educationists and education administrators for proper orientations and learning programmes for the V.M. teachers.
75. Simultaneously it adds responsibility of the institutionalize methodology of settlement of graded designed text books
76. Accordingly gets added responsibility of the evaluators of Vedic Mathematics knowledge imbibing claims of students.
77. With it becomes the responsibility of the research scholars to reach at inner folds of the values reservoir of Vedic knowledge, Vedic systems and Ganita Sutras.

## III
## TRANSCENDENTAL CODE VALUES & GEOMETRIC FORMATS

1. Ganita Sutras text has reached us in Devnagri script.

2. With it it would be advisable that one shall be acquainted with Devnagri alphabets in its script forms for its letters.
3. Script forms of the letters are preserving good number of features which at points will be of great help to appreciate their structural values.
4. Devnagri alphabet is an mathematically settled alphabet.
5. It has availed geometric format .
6. Each individual letter as well is accepting association of number value as well as a geometric format .
7. Alphabet letters of Devnagri alphabet are classified and grouped as 9 vowels, 25 verga consonants , 4 Antsatha letters, 4 Ushmana letters and 8 Yama letters.
8. 9 vowels range accept sequential association of values 1 to 9 in that sequence and order as their respective transcendental code values.
9. 25 verga consonants accept organization as of 5 rows and 5 columns with each row and each column being a set of 5 letters.
10. First row accepts association of values ( 1,2,3,4,5) .
11. Second row accepts association of values ( 2,3,4,5,6) .
12. Third row accepts association of values ( 3,4,5,6,7) .
13. Fourth row accepts association of values ( 4,5,6,7,8) .
14. Fifth row accepts association of values ( 5,6,7,8,9)
15. Four Antsatha letters accept values ( 1,3,5,7).
16. Four Ushmana letters accept values ( 2,3,6,9)
17. 8 Yama letters accept values ( 9,10,11,12,13,14,15,16).
18. 9 vowels sequentially accept geometric format of dimensional frames of 1 to 9 space respectively .
19. First column of verga consonant sequentially accept geometric format of dimensional order of 1 to 5 space.
20. Second column of verga consonant sequentially accept geometric format of boundary folds of 2,3,4,5,6 spaces.
21. Third column of verga consonant sequentially accept geometric format of domain folds of 3,4,5,6,7 spaces.

22. Fourth column of verga consonant sequentially accept geometric format of origin fold of 4,5,6,7,8 spaces
23. Fifth column of verga consonant sequentially accept geometric format of base fold of 5,6,7,8,9 spaces
24. 4 Antsatha letters accept geometric format of reach of transcendence at 1,3,5,7 spaces.
25. 4 Ushmana letters accept synthetic formats during transcendence as of 2,3,6,9 spaces.
26. 8 Yama letters accept formats of reach from origin to boundary of 4 space from Ist to Eight components as of placement value 9,10,11,12,13,14,15,16.
27. With above distinct value and geometric format of each letter, the word formulations availing these letters work out distinct mathematical domain formulations.
28 It is this feature of Vedic Mathematics formulations as words formulation of Devnagri alphabet which is the transcendental feature of Vedic Mathematics systems which distinguish it and make it of transcendental distinguish ability of over reach for any other mathematical system.
29. As such it would be a very blissful exercise for a student of Vedic Mathematics, Science & Technology to prepare one's own TCV dictionary .
30. One shall make as many entries in this dictionary as one can.
31. Alongwith every entry one shall append one's own comprehension note in respect of every such entry.
32. It would be a very blissful exercise to tabulate different words formulation accepting same transcendental code values.
33. Illustratively words formulation " Ek", " Akash", " Iti", " Shakha" accept transcendental code value 8.
34. Like that this reach can be of the range of $2^7 = 128$ formulations accepting transcendental code value 8.
35. In general there are $2^{n-1}$ words formulation of transcendental code value $2^8$.

36. It would be a very blissful exercise to distinguish between a pair of words formulation of same transcendental code values in terms of their geometric format .

37. In fact the very first letter of each of these formulations , will help draw distinguishing features because of their distinct geometric format.

38. Therefore, the first placement at which such pair of formulations are availing distinct letters will help comprehending the distinguishing features because of distinguished geometric format s of those letters.

39. Here it would be important to take note that more than one letter may have the same transcendental code value but no two distinct letters are having identical geometric format.

40. For convenient ready reference, the Devnagri alphabet with transcendental code values is being reproduced here under:

( Devnagri alphabets)

# VM Article - 3

## VIRTUES REACH VALUES STEPS OF GANITA SUTRAS OF SWAMI BHARTI KRISHNA TIRATHA JI MAHRARAJ

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## VIRTUE I

### VEDIC SOURCE OF GANITA SUTRAS

**VALUE STEP 1. Atharvveda Parisista ( Atharvaveda appendix)**

1. "Ist value of Ganita Sutras is that these are " Contained in the Parisista ( the Appendix-portion) of the Atharvaveda in a few simple steps and by methods which can be conscientiously described as mere " mental arithmetic".

( I )

*Para 9 of Author's preface of Vedic Mathematics Book by Swami Bharti Krishna Tiratha Ji Maharaj*

**VALUE STEP 2 POINTED ATTENTION TO GANITA SUTRAS TEXT**

2. "One particular portion I am referring to, a particular portion of the Atharva-Veda is called the ganita sutras.The ganita sutras, are also called the Sulba sutras " the easy mathematical formulae," that's the meaning of the expression. And there are sixteen sutras, sixteen aphorisms in all, and the general name "ganita" mathematics, is given to the subject".

(II)

*Chapter 12, Vedic Mathematics Book*
*Vedic Metaphysics by Swami Bharti*
*Krishna Tiratha Ji Maharaj*

## VIRTUE 2:
## REACH AT MATHEMATICS OF GANITA SUTRAS

### BACKGROUND STEP 1 INABILITY OF COLEBRROKE & OF WILSON & OTHERS TO UNDERSTAND GANITA SUTRAS

3. "And then Colebrooke, in his translations, went as far as that, but at that point he stopped and said " We are unable to understand what the contents of these sutras are, and what connection these sutras have with mathematics." And therefore, there was no possibility of his translating what was absolutely unintelligible to him. But he had the meekness of mind, the scientific frame of mind, to say, " I do not understand.It is unintelligible, it is beyond me." But Horace Hayman Wilson and others of that type, with a superiority complex in which they could not possibly admit that something was unintelligible to them, took another stand altogether. Coming to the same passage, the same portion of the Atharva-veda, Horace Hayman Wilson said, " This is all nonsense." That was the single word with which the whole thing was dismissed. "

*Chapter 12, Vedic Mathematics Book*
*Vedic Metaphysics by Swami Bharti*
*Krishna Tiratha Ji Maharaj*

**VALUE STEP 4 FAITH AND CONVICTION IN VEDAS OF SWAMI BHARTI KRISHNA TIRATHA JI MAHRAJ**

4**.** **"Well, that** put me on the track. I said there must be something. The ideas may be wrong; the conclusions may be wrong; the details of all the things considered may be wrong; the facts and the factors of the situation taken into account may have been insufficient, and sometimes, irrelevant factors may have been taken into account. And as the natural result of taking irrelevant factors into account and of excluding relevant factors, well, naturally the vision is distorted and the judgment is bound to become warped. The text may be all wrong; the conclusion, the arguments may be all wrong, and yet there must be something in the subject which was being discussed with so much earnestness and which the commentators were trying to understand but could make nothing out of. So I went on with my simple idea that there was some meaning. The meaning, may be all absolutely wrong but to dismiss something, well, off hand as nonsense because it is not understandable, **I felt, was not correct."**

*Chapter 12, Vedic Mathematics Book*
*Vedic Metaphysics by Swami Bharti*
*Krishna Tiratha Ji Maharaj*

**VALUE STEP 5 SWAMI JI SOUGHT THE SOLITUDE OF FOREST MEDITATION**

5. "**And, that** was the first thing which started me on this line. And going to the forest, seeking the solitude of the forest meditation, I tried to make some meaning out of **these sutras**."

(II)

*Chapter 12, Vedic Mathematics Book*
*Vedic Metaphysics by Swami Bharti*
*Krishna Tiratha Ji Maharaj*

**VALUE STEP 6 AFTER MEDITATION, SWAMI JI TOOK HELP OF LEXICOGRAPHIES, LEXICONS OF EARLIER TIM**ES

**6.** But here, the heading is Ganita Sutra, mathematical formulae. So I said there must be something. And after long years and years of meditation in the forest, I took the help of lexicographies, lexicons of earlier times

*Chapter 12, Vedic Mathematics Book*
*Vedic Metaphysics by Swami Bharti*
*Krishna Tiratha Ji Maharaj*

**FULFILMENT STEP 7 SWAMI JI GOT THE KEYS AND WAS ABLE TO FIND OUT THE MEANING**

7. "So I studied the old lexicons, including Visva, Amara, Arnava, Sabdakalpadruma etc. books which are known by name only, and which people see in the libraries, but which are never turned for any useful purpose. Well, with these I was able to find out the meanings. I got the key in that way in one instance, and one thing after another helped me in the elucidation of the other sutras, the other formulae. And I found to my extreme astonish ment and gratification that the sutras dealt with mathematics, in all its branches. Only sixteen sutras cover all branches of mathematics, arithmetic, algebra, geometry, trigonometry, physics, plain and spherical geometry, conics, calculus, both differential, and integral, applied mathematics of various kinds, dynamics, hydrostatics, statics, kinematics, and all. And, it was a great surprise and a great gratification to me that after all, I was able to get something out of it, and it was not all nonsense as Professor Horace Hayman Wilson and others had declared**."**

*Chapter 12, Vedic Mathematics Book*
*Vedic Metaphysics by Swami Bharti Krishna Tiratha Ji Maharaj*

**VIRTUE 3**

# THE COMPARISON & CONTRAST WAY TO ARRIVE AT CONCLUSIONS

## VIRTUE STEP 8 EXPLANATORY EXPOSITION ABOUT COMPARISON CONTRAST METHOD OF APPLICATION OF GENERAL RULES OF GANITA SUTRAS

It is as part Be of Author's Preface of Vedic Mathematics Book that preliminary note has been focused about the explanatory exposition in respect of comparison and contrast method of application of Ganita Sutras. This note gives a break through lead and also provides insight for advanced students of Vedic Mathematics to apply general rules of sutras to specific situations by the methods of comparison and contrast . This note runs over 9 paragraphs and the same deserves to be imbibed well by the students of Vedic Mathematics having an urge to further explore the applied field of Ganita Sutras, particularly in reference to the items specified by Swami Ji in the book Vedic Mathematics. The note reads as :

**Preliminary Note: --**

1. With regard to every subject dealt with in the Vedic Mathematical Sutras, the rule generally holds good that the Sutras have always provided for what may be termed the '*General Case*' (by means of simple processes which can be easily and readily-nay, instantaneously applied to any and every question which can possibly arise under any particular heading.

2. But, at the same time, we often come across special cases, which, although classifiable under the general heading in question, yet present certain additional and typical characteristics, which render them still easier to solve. And, therefore, special provision is found to have been made for such special cases by means of special Sutras, sub-Sutras, sub-Sutras, corollaries, etc., relating and applicable to those particular types alone.

3. And all that the student of these Sutras has to do is to look for the special characteristics in question, recognise the particular type before him and determine and apply the special formula prescribed therefore.

4. And, generally speaking it is only *in case* no special case is involved, that the general formula has to be resorted to. And this process is naturally a little longer. But it need hardly be pointed out that, even then, the longest of the methods according to the Vedic system comes nowhere (in respect of length, cumbrousness and tediousness etc.,) near the corresponding process according to the system now current everywhere.

5. For instance, the conversion of a vulgar fraction (say 1/19 or 1/29 or 1/49 etc.,) to its equivalent recurring decimal shape involves 18 or 28 or 42 or more steps of cumbrous working (according to the current system) but requires only one single and simple step of mental working (according to the Vedic Sutras)!

6. This is not all. There are still other methods and processes (in the latter system) whereby even that very small (mental) working can be rendered shorter still! This and herein is the beatific beauty of the whole scheme.

7. To start with, we should naturally have liked to begin this explanatory and illustrative exposition with a few processes in arithmetical computations relating to multiplications and divisions of huge numbers by big multipliers and big divisors respectively and then go on to other branches of mathematical calculation.

8. But, as we have just *hereinabove* referred to a particular but wonderful type of mathematical work wherein 18, 28, 42 or even more steps of working can be condensed into a single, step answer which can be written down immediately (by means of what we have been describing as straight, singleline, mental arithmetic); and, as this statement must naturally have aroused intense eagerness and curiosity in the minds of the students (and the teachers too) and especially as the process is based on elementary and basic fundamental principals and requires no previous knowledge of anything in the nature of an indispensable and inescapable pre-requisite chapter, subject and so on, we are beginning this exposition here with an easy explanation and a simple elucidation of that particular illustrative specimen.

9. And then we shall take up the other various parts, one by one, of the various branches of mathematical computation and hope to throw sufficient light thereon to enable the students to make their own comparison and contrast and arrive at correct conclusions on all the various points dealt with.

(I)

*Part B of Author's preface of Vedic Mathematics Book*
*by Swami Bharti Krishna Tiratha Ji Maharaj*

## VIRTUE 4
## MATHEMATICAL REACH OF GANITA SUTRAS

### VIRTUE STEP 9 FOCUS OF SWAMI JI UPON SALIENT ITEMS OF GANITA SUTRAS

**8.** **"**We may, however, at this point, draw the earnest attention of every one concerned to the following salient items thereof: --

(i) The Sutras (aphorisms) apply to and cover each and every part of each and every chapter of each and every branch of mathematics (including arithmetic algebra, geometry—plane and solid, trigonometry—plane and spherical, conics—geometrical and analytical, astronomy, calculus -- differential and integral etc., etc. In fact, there is no part of mathematics, pure of applied, which is beyond their jurisdiction;

(ii) The Sutras are easy to understand, easy to apply and easy to remember; and the whole work can be truthfully summarized in one word "mental"!

(iii) Even as regards complex problems involving a good number of mathematical operations (consecutively or even simultaneously to be performed), the time taken by the Vedic method will be a third, a fourth, a tenth or even a much smaller fraction of the time required according to modern (i.e. current) Western methods).

(iv) And, in some very important and striking cases, sums requiring 30,50,100 or even more numerous and cumbrous "steps" of working (according to the current Western methods) can be answered in a single and simple step of work by the Vedic method! And little children (of only 10 or 12 years of age) merely look at the sums written on the blackboard (on the platform) and immediately shout out and dictate the answers from the body of the convocation hall (or other venue of the demonstration). And this is because, as a matter of fact, each digit automatically yields its predecessor and its successor! And the children have merely to go on tossing off (or reeling off) the digits one after another (forwards or backwards) by mere mental arithmetic (without needing pen or pencil, paper or slate etc)!

(v) On seeing this kind of work actually being performed by the little children, the doctors, professors and other "big-guns" of mathematics are wonder struck and exclaim: -- "Is this mathematics or magic"? And we invariably answer and say: "It is both. It is magic until you understand it; and it is mathematics thereafter"; and then we proceed to substantiate and prove the correctness of this reply of ours! And

(vi) As regards the time required by the students for mastering the whole course of Vedic mathematics as applied to all its branches, we need merely state from our actual experience that 8 months (or 12 months) at an average rate of 2 or 3 hours per day should suffice for completing the whole course of mathematical studies on these Vedic lines instead of 15 or 20 years required according

to the existing systems of the Indian and also of foreign universities.

(I)

*Para 14 of Author's preface of Vedic Mathematics Book*
*by Swami Bharti Krishna Tiratha Ji Maharaj*

**VIRTUE STEP 10 ITEMS REACH** **TO NAME A FEW MORE OF SPECIFIC OF VEDIC SUTRAS**

**Chapter 40** of Book Vedic Mathematics specifically enlist a few of the following items of reach of Ganita Sutras:

(1) Subtractions;
(2) Mixed additions and subtractions;
(3) Compound additions and subtractions;
(4) Additions of Vulgar Fractions etc.;
(5) Comparison of Fractions;
(6) Simple and compound practice without taking Aliquot parts etc.
(7) Decimal operations In all decimal work;
(8) Ratios, Proportions, Percentages, Averages etc.;
(9) Interest, Annuities, Discount etc.;
(10) The Centre of Gravity of Hemispheres etc.;
(11) Transformation of Equations; and
(12) Dynamics, Statistics, Hydrostatics, Pneumatics etc., Applied Mechanics etc.

*Para 40 of book Vedic Mathematics*
*by Swami Bharti Krishna Tiratha Ji Maharaj*

## VIRTUE STEP 11 SOLID, TRIGONOMETRY, ASTRONOMY ETC.

"In Solid Geometry, Plane Trigonometry, Spherical Trigonometry and Astronomy too, there are similarly huge masses of Vedic material calculated to lighten the mathematics students' burden. We shall not, however, go here and now into a detailed disquisition on such matters but shall merely name a few of the important and most interesting headings under which these subjects may be usefully studied:

(1) The Trigonometrical Functions and their inter-relationships, etc.;
(2) Arcs and chords of circles, angles and sines of angles etc.;
(3) The converse, i.e. sines of angles, the angles themselves, chords and arcs of circles etc.;
(4) Determinants and their use in the Theory of Equations, Trigonometry, Conics, Calculus etc.;
(5) Solids and why there can be only five regular Polyhedrons, etc.;
(6) The Earth's daily Rotation on its own axis and her annual relation around the Sun;
(7) Eclipses;
(8) The Theorem in Spherical Triangles relating to the product of the sines of the Alternate Segments, i.e.

$$\text{about: } \frac{\sin BD}{\sin DC} \quad \frac{\sin CE}{\sin EA} \quad \frac{\sin AF}{\sin FB} = 1 \text{ and}$$

(9) The value of $\pi$, i.e. the ratio of the circumference of a circle to its Diameter.

(I)

*Para 40 of book Vedic Mathematics*

*by Swami Bharti Krishna Tiratha Ji Maharaj*

## VIRTUE STEP 12 VALUE OF Π/10 TO 32 PLACES OF DECIMALS! WITH A "SELF-CONTAINED MASTER-KEY"

Actually, the value of π/10 is given in the well-known Anustub metre and is couched in the Alphabetical Code-Language described in an earlier chapter:

गोपीभाग्यमधुव्रात-श्रृङि .गश्शोदधिसन्धिग।।
खलजीवितखताव गलाहालारसंधर।।

It is so worded that it can bear three different meanings –all of them quite appropriate. The first is a hymn to Lord Sri Krsna; the second is similarly a hymn in praise of Lord Sankara; and the third is an evaluation of π/10 to 32 places of Decimals! With a "Self-contained master-key" for extending the evaluation to any number of decimal places!

## VIRTUE 5
## VEDIC NUMERICAL CODE

## VIRTUE STEP 13 VEDIC NUMERICAL CODE

**Swami Ji** has brought to focus Vedic numerical code,in Chapter 25 of book Vedic Mathematics as under:

The key has also been given in its simplest form: 'कादि नव, टादि नव, पादि पञ्चक, याद्यष्टक and क्षः शून्यमः' which means:

(1) Ka and the following eight letters;

(2) ta and the following eight letters;

(3) pa and the following four letters

(4) ya and the following seven letters; and

(5) ksa ( or ksudra) for zero

Elaborated, this means:

(1) ka, ta, pa and ya all denote 1;

(2) kha, tha, pha and ra all represent 2;

(3) ga, da, ba and la all stand for 3;

(4) gha, dha, bha, and va all denote 4;

(5) gna, na, ma and sa all represent 5;

(6) ca, ta, and sa all stand for 6;

(7) cha, tha, and sa all denote 7;

(8) ja, da and ha all represent 8;

(9) jha and dha stand for 9; and

(10) ksa (or ksudra) means Zero!

(I)

*Para 25 of book Vedic Mathematics*
*by Swami Bharti Krishna Tiratha Ji Maharaj*

**VIRTUE 6**

**SPECIFIC DEMONSTRATION OF GANITA SUTRAS REACH I**

**VIRTUE STEP 14(1)DEMONSTRATION AT CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA, CALIFORNIA ON FEBRUARY, 19,1958 ( CHAPTER 12 OF BOOK VEDIC METAPHYSICS)**

**VIRTUE STEP 14(2)PART C OF AUTHOR'S PREFACE ( BOOK VEDIC MATHEMATICS)**

**VIRTUE STEP 14(3) THE DEMONSTRATIONS IN CHAPTERS OF BOOK VEDIC MATHEMATICS.**

## VIRTUE 7
## INTER-RELATIONSHIP OF SUTRAS AND UPSUTRAS

**VIRTUE STEP 15 TOPICAL CHASE IN THE BOOK VEDIC MATHEMATICS AND ELABORATION OF RELATIONSHIP OF GANITA SUTRAS AND UPSUTRAS AND GENERAL & SPECIFIC RULES STEPS.**

These triple features ( 1) relationship of rules of ganita sutras and upsutras (2) General Rules and specific applications, and (3) Topical chase in different ways deserve to be followed for their comprehension, as distinct virtues, over and above the demonstrated illustrated applications in terms of concrete examples worked out in the book : Vedic Mathematics.

## VIRTUE 8
## TEXT OF GANITA SUTRAS ( & UPSUTRAS)

**VIRTUE STEP 16. TEXT OF 16 SUTRAS AND 13 UPSUTRAS**

**Prof.** Kenneth Ronald Williams in his article (1) titled " The Sutras of Vedic Mathematics has brought to pointed attention about the text of Ganita Sutras as :

" A list of sixteen Sutras and thirteen sub-Sutras appears in the book " Vedic Mathematics" and is followed by a note in brackets that " This list has been compiled from stray references in the text – Editor". There are a number of discrepancies between this list and the text however. For example the Sutra Lopanasthapanabhyam is always quoted in the text as being a Sutra but is given as a sub-Sutra in the list. So the question arises as to the validity of this list. In 1981 Andrew Nicholas, a UK academic, met Mr Somanath Mahapatra, a disciple of Sri Bharati Krsna Tirthaji and was shown a list of Sutras and sub-Sutras written in Sri Bharati Krsna Tirthaji's own hand. That list was the same as the one given in the book; both Sutras and sub-Sutras were listed in the same order, except that there was an extra sub-Sutra. Chakravat.

(III)

*ANNEXURE 1 : SUTRAS OF VEDIC MATHEMATICS*

*BY PROF. KENNETH R. WILLIAMS*

**VIRTUE 9**

**MENTAL MATHEMATICS**

**VIRTUE STEP 17 CHAKRAVAT**

Real virtue of Vedic Mathematics is it being parallel to the sequential growth of intelligence field in human mind. This sequential unfolding folds cyclic order is inherently imbedded in Ganita Sutras which sequentially unfold as sutra 1 to 16 with upsutras bridging the gaps in between and this fulfilled progression, of its own accepts a

cyclic format of reach back from Ganita Sutra 16 to Ganita Sutra 1 and the system continues unfolding further and further. It is for us to avail or not this ancient wisdom as our main stream discipline in schools, college and universities or permit it to go again dormant by approaching it being a magic, shortcut tricks speed and nothing more.

## VIRTUE 10
## MATHEMATICAL DOMAIN OF UNIVERSAL ORDER
## VIRTUE STEP 18 VEDIC MATHEMATICAL DOMAIN

Approaching Vedic Mathematics, the Vedic systems way will bring us face to face with Vedic Mathematical domain as that :

1. Vedic mathematical domain is organized along Sathapatya measuring rod format. Sathapatya measuring rod is a synthetic set up of hyper cubes 1 to 6.
2. Hyper cubes 1 to 6 are four fold manifestation layers (-1, 0, 1, 2), (0, 1, 2, 3), (1, 2, 3, 4), (2, 3, 4, 5), (3, 4, 5, 6) and (4, 5, 6, 7).
3. 1 to 6 space content manifest as domain folds of hyper cubes 1 to 6 respectively.
4. These domain folds as enveloped within boundary folds and integrated in terms of the respective dimensional frames are the framed domains.
5. With super imposition of the origin of the dimensional frame upon the seat of origin fold within domain fold makes the domain fold as a framed domain fold with a sealed origin.
6. Framed domain with sealed origin plays the roles of dimension fold, boundary fold, domain fold and origin fold.
7. 1-space content lump manifesting as framed domain of hyper cube 1 plays the role of a linear dimensional order.
8. Likewise 2-Space, 3-Space, 4-Space, 5-Space and 6-Space content lumps manifesting as framed domain folds of sealed origins plays the roles of spatial, solid, creative, transcendental and self referral (6-space) dimensional orders.

9. Linear dimensional order makes out a linear measure accepting 1 as ‘1’ as the working unit.
10. Likewise spatial, solid, creative, transcendental and self referral (6-space) dimensional orders as measures make out 2 as 1 and 1 as 2, 3 as 1 and 1 as 3, 4 as 1 and 1 as 4, 5 as 1 and 1 as 5, 6 as 1 and 1 as 6 as working units.
11. This way the vedic mathematical domain is of 1 as 1 unit, 2 as 1 and 1 as 2, 3 as 1 and 1 as 3 units, 4 as 1 and 1 as 4 units, 5 as 1 and 1 as 5 units, and 6 as 1 and 1 as 6 units mathematical domains.
12. These features of sequential range of mathematical domains of vedic systems make Vedic Mathematical domain to be of specifically distinct values.
13. It brings to focus as that the Mathematics of 1 space as of linear order is the Mathematics of 1 as 1 unit and it is of distinct value than that of Mathematics of other dimensional spaces.
14. Likewise Mathematics of 2, 3, 4, 5 and 6 spaces are of distinct values distinguishable from each other.
15. Accordingly each of 1 to 6 spaces lead to their respectively distinct Vedic Mathematics, Sciences and Technologies being distinctively dimensional spaces specific.
16. As every dimensional domain structures out the specific hyper cube format of that order as a four fold manifestation layer along the format of Idol of Lord Brahma for head lord, creator the supreme, as such the whole range of Vedic Mathematical domain gets unified within creator space (4-space)
17. This way the chase of Vedic Mathematical domain becomes the chase of manifested creation along the format of Idol of Lord Brahma, which goes parallel to the format of hyper cube 2 as a four fold manifestation layer format (0, 1, 2, 3) to be hyper cube 2, 3, 4, 5, a spatial order format.
18. Accordingly the measure units gets fixed as per the features of hyper cube 2 as a four fold manifestation layers format (0, 1, 2, 3) with a summation value (0, 1, 2, 3) = 6

19. One may have a pause here and take note that hyper cube 4 as a four fold manifestation layer (2, 3, 4, 5) with summation value 2 + 3 + 4 + 5 = 14 and its spatial order of the format of hyper cube-2 as four fold manifestation layer (0, 1, 2, 3) with summation value 0 + 1 + 2 + 3 + 6 makes the basic values pair (6, 14) for chase of mathematical domain in terms of formats of hyper cubes as four fold manifestation layers along the format of Idol of Lord Brahma, four head lord, creator the supreme with a pair of eyes equipped in each head and Lord Brahma sits gracefully on the lotus seat of eight petals and meditates within cavity of his own heart upon transcendental Lord Shiv and with the grace of transcendental, Lord Brahma multiplies as ten Brahmas.
20. Parallel to it Vedic mathematical domain sequentially unfolds itself as a transcendence Phenomenon from the origin fold
21. It is this unfolding process which need be comprehended well and to be thoroughly appreciated for imbibing its values to acquire full insight and enlightenment about it and its processing processes.

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2. Vedic Metaphysics by Swami Sri Bharati Krsna Tirthaji Maharaj.3. Glimpses of Vedic Mathematics by Dr S.K.Kapoor.

Dated: 11.8.2016 Dr.S.K.Kapoor *( Ved Ratan)*

File-3, Ganita Sutra 1 and intelligence field