

List of VM Consolidated documents of Dr. S. K. Kapoor

List 2 Different aspects of Vedic Mathematics

Article 43

Zero Space, Negative Space and Negative number of dimensions

1. Existence of 0-space

Existence of 0-space is of 'affine state'. Too conceive it, one is to be of parallel mental state. All that which stands absorbed as manifested existence phenomenon is to be transcended.

A transcendence from manifested entities will bring us face to face with the format along which the thing (s) stand manifested.

2. The format

Surface is the format for solid entities. Whether 'surface' is not a manifested entities is the poser which will bring in a spatial twist for the processing logic.

3. Spatial processing logic

Spatial processing logic is self referral one. Here 'one' is 'two' and 'two' as 'one' brings in 'one-half' as a working unit. Availability of pair of halves, makes 'one of them, as a reference format for the other as a chasing formatted entity'.

The existence and availability of reference format and formatted format (a formatted entity) is a set up of spatial processing logic.

4. Pairing feature

Pairing feature inherently presumes existence of a pair of entities. The pair of halves, inherently are of value of being a unit state. This unity state is of a dual status. Firstly, it is an entity, a manifested one. And, secondly, it is simply a format along which is the lively state of a pair of halves. And each half acquire status of 'one' / whole entity. It is this feature and it is this value which becomes a lively phenomenon of entity being no entity, 'one' being 'zero' and 'zero' being 'one'. And a paired pair of '0 and 1', as and being, a paired features of spatial processing logic, which deserves to be comprehended thoroughly and same is to be imbibed fully for its appropriate insight. With it there happens a mental state to be parallel with affine state at which zero space is vis-à-vis manifested entity state.

5. Negative spaces, a step far ahead

Negative spaces are a step far ahead. Zero space with its pairing status brings in its interlocking with itself, which manifests and makes itself visible in terms of our two well known, arithmetic operation, namely addition and multiplication viz. $0 + 0 = 0 = 0 \times 0 = (-0) \times (-0)$.

One shall have a pause here and permit to permit the transcending mind to fully glimpse and completely imbibe these features as values expression in terms of addition and multiplication, being illustrative cases of 'pairing processing logic'.

Of these, manifestation situations : (i) $0 = 0 + 0$, (ii) $0 = 0 \times 0$ and (iii) $0 = (-0) \times (-0)$; the first two are unifying addition and multiplication but last two are unifying positive and negative orientations.

One shall have a further pause here and to permit the transcending mind to fully glimpse and to completely imbibe this feature of unification of orientations.

Here firstly, comes in the existence of a pair of orientations. Secondly both orientations in their unified state stand neutralized and the resultant unified state is affine state of existence of 0-space state: A phenomenon of existence of whole range of positive negative and zero states as of a unified state.

One may further have a pause here and be parallel with the existence phenomenon of parallel paired pairs of positive and negative spaces : (+ 1 space, - 1 space) of difference value '2' and summation value '0'.

The emerging difference and summation values pair (2, 0) makes a format, which deserves to be comprehended well for its complete imbibing.

Vedic Systems have worked it out as a basic format of 'domain, dimension, interlocking'.

6. (2, 0) as domain-dimension format

(2, 0) is a paired entity, a specific entity with 2-space as domain and 0-space as dimension.

(2, 0) is a format. The entity (2, 0) is of this very format (2, 0).

(2, 0) as a specific entity of (2, 0) format and (2, 0) format for manifestation of whole sequence of dimensional entities of positive, zero and negative dimensional order makes a Vedic Mathematics of synthesis of any number of dimensions of same order, may it be positive, zero or negative dimensional orders and may it be

positive, zero or negative number of dimensions of any of positive, zero or negative dimensional order.

7. Synthesis of dimension of same order

The dimensional entity $(2, 0)$, a 2-space content manifesting as (2-space) domain of 0-space order, brings in infinitely infinite number of points of a surface. One may have a pause here and to permit the transcending mind to fully comprehend and to completely imbibe the infinitely infinite cardinality of the points of a surface. The infinite infinity feature is there because of the dimensional frame of 2-space domain being a set up of pair of axes of zero order each. This value infinitely infinite ($\infty \times \infty$), makes it a mathematics of infinity as a unit leading us to a set up of pair of such units as a pair of axes. Let us further have a pause here and have a revisit to infinity of a unit composed as infinite points as a line.

Let us revisit zero as a value. Let us revisit zero as a entity which as a single entity set accepting cardinality for the set being 'one'. A step ahead a set up of a pair of such entities $(0, 0)$ will lead to cardinality 'two'. A step further ahead, a pair of zero order axis synthesize a surface (2-space); $(0, 0) = (2)$.

One shall sit comfortably and to permit the transcending mind to fully comprehend and completely imbibe these features of structured points of zero area of a surface.

Vedic Systems have worked out the infinitely infinite structured points of zero area of a surface as a format for synthesis of dimensions of same order, as under :-

Dimensional synthesis

Vedic systems accept and work out 4-space as creator's space.

4-space is a spatial order space (2-space as dimension of 4-space).

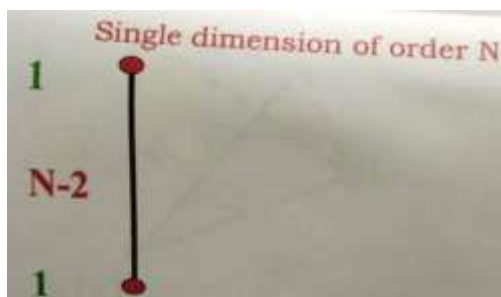
2-space as dimension with square (hyper cube 2) as its representative regular body, provides the format for synthesis of dimensions (as axes).

Infinite points make a line and infinite line make a surface. The points (0-space), lines (1-space) and surfaces (2-space) within a surface make a set up, as space ranges within a space.

The axis, in general, for all values of n , as a set up of n points, makes a format for the axis of all spaces.

Single axis, as a set up of n points, makes an organization, as a pair of end points and remaining $(n-2)$ points, as the domain.

The single axis, as such as a set up of n points, leads to parallel value n as single axis value.

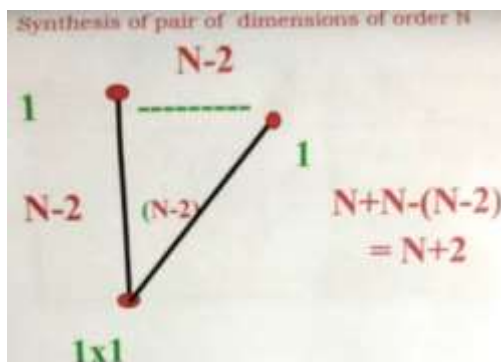


Let us start making a table of number of axes and the value thereof as and within a dimensional frame.

SN	Number of axis	Value
1	1	n

Pair of axes

The second axis with one end at the origin, together with the first axis, will make a set up as under.



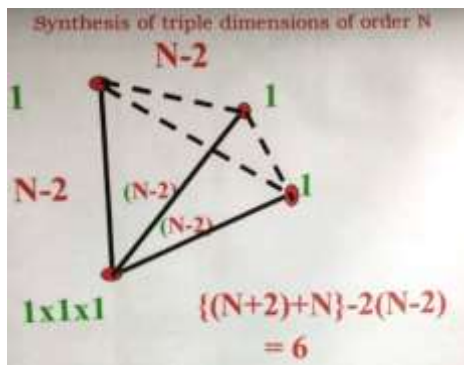
The gap between the second end point of first axis and second end point of second axis, requires $n - 2$ points to bridge the same. These $(n-2)$ points will be supplied by second axis out of its $n - 2$ points, between its pair of end points. With it the contribution because of the second axis will remain only $[n - (n-2)] = 2$. And the net value for both axes will come to be $n + 2$. Let us update about table.

SN	Number of axis	Value
1	1	n
2	2	$n + 2$

Three axes

Third axis, with its one end at the origin, its second end, in respect of the second end of the first axis, as well as the second end of the second axis will make a pair

of gaps requiring $(n-2)$ points each for their bridging. This way though the contribution of third axis is only of n points, while requirement for bridging above pair of gaps will be of $2(n-2)$ points. As a result the net value of a set up of three axes comes to be $[(n+2) + n - 2(n-2)] = 6$.



Let us update the above table

SN	Number of axis	Value
1	1	n
2	2	$n + 2$
3	3	6

Note :-

One may have a pause here and take note that the above set ups will rightly lead to the observation as that 'only' half of the polynomials are going to be in manifested form. It is so, as because of the spatial order of the creator space and the working unit ($\frac{1}{2}$) is there due to a pair of generic units, '2 as 1' and '1 as 2'. The surface, infact is of a pair of faces. The above depiction is only in respect of one of the faces. Other face will complement and supplement and will provide for the second half of the polynomials. One shall sit comfortably and to permit the transcending mind to imbibe the working rule value ($\frac{1}{2}$). The same of its own will take to the second phase of the surface. The specific feature $2 + 2 = 2 \times 2 = (-2) \times (-2)$ for domain and $0 + 0 = 0 \times 0 = (-0) \times (-0)$ for the dimension is about the unification not only for the addition and multiplication operation but also is for the pair of opposite orientation as well. It is this unification feature of a pair of opposite orientations, which will play its role and when both faces of the surface will be marking their presence, the same will bring in the role of unification of pair of opposite orientation, and the second half of polynomial will complement and supplement the first half of the polynomial playing its role in above sequential synthesis values of geometric formats for dimensions of same order. This aspect deserves to be

glimpsed and imbibed distinctively by permit the mind to continuously remain in prolong sittings of trans.

Four axes

Contribution because of fourth axis as well will be only in 'n' while triple gaps of coordination of second end point of four axis, with second end points of first three axis will be $3(n-2)$ and as a result the net value of the set up of four axis will be $6 + n - 3(n-2) = 12 - 2n$

Let us update the above table

SN	Number of axis	Value
1	1	n
2	2	n + 2
3	3	6
4	4	12 - 2n

Five axes

Likewise, we can reach at the value for the set up of five axes being $(12-2n) + n - 4(n-2) = 20 - 5n$

SN	Number of axis	Value
1	1	n
2	2	n + 2
3	3	6
4	4	12 - 2n
5	5	20 - 5n

This way, this table can be sequentially updated as

Sixth axes

SN	Number of axis	Value
1	1	n
2	2	n + 2
3	3	6
4	4	12 - 2n
5	5	20 - 5n
6	6	30 - 9n

Seven axes

SN	Number of axis	Value
1	1	n
2	2	n + 2
3	3	6
4	4	12 - 2n

5	5	$20 - 5n$
6	6	$30 - 9n$
7	7	$42 - 14n$

The sequential steps and pattern are clear from the values

$$12 - 2n,$$

$$20 - 5n = (12 + 8) - (2 + 3)n$$

$$42 - 9n = (30 + 12) - (5+4)n$$

n may be of positive, zero or negative whole number.

The table of synthesis values of dimensions of equal order comes to be as under

Dimensional synthesis											
-84	-50	-24	-6	4	6	-6	-4	6	24	50	84
-75	-45	-22	-6	3	5	-5	-3	6	22	45	75
-66	-40	-20	-6	2	4	-4	-2	6	20	40	66
-57	-35	-18	-6	1	3	-3	-1	6	18	35	57
-48	-30	-16	-6	0	2	-2	0	6	16	30	48
-39	-25	-14	-6	-1	1	-1	1	6	14	25	39
-30	-20	-12	-6	-2	0	0	2	6	12	20	30
-21	-15	-10	-6	-3	-1	1	3	6	10	15	21
-12	-10	-8	-6	-4	-2	2	4	6	8	10	12
-3	-5	-6	-6	-5	-3	3	5	6	6	5	3
6	0	-4	-6	-6	-4	4	6	6	4	0	-6
15	5	-2	-6	-7	-5	5	7	6	2	-5	-15
24	10	0	-6	-8	-6	6	8	6	0	-10	-24
33	15	2	-6	-9	-7	7	9	6	-2	-15	-33

Let us visit the above table to have proper comprehension and to acquire appropriate insight about this foundational concept and import of dimensional synthesis of dimensions of same order.

First of all let us be face to face with, the synthesis values range, of single, double, triple, quadruple and so on number of linear axis which comes to be

Table of synthesis of linear order axis

Number of axis	1	2	3	4	5	6	7	8
Synthesis value	1	3	6	10	15	21	28	36

A step ahead the table of synthesis values of spatial order dimensions comes to be

Table of synthesis of linear order axis

Number of axis	1	2	3	4	5	6	7	8
Synthesis value	2	4	6	8	10	12	14	16

For comprehensive view, let us visit the combined table of synthesis values of linear and spatial order dimensions

Combined Table of synthesis values of linear and spatial order dimensions

Number of axis	1	2	3	4	5	6	7	8
Synthesis value of linear axis (1-space as axis)	1	3	6	10	15	21	28	36
Synthesis value of spatial axes (2-space as axis)	2	4	6	8	10	12	14	16

Let us have a pause and let us visit the difference values of equal number of linear and spatial axis, which makes a sequential range as under

Table of difference values of synthesis of equal number of linear and spatial axis

Number of axis	1	2	3	4	5	6	7	8
Synthesis value of linear axis (1-space as axis)	1	3	6	10	15	21	28	36
Synthesis value of spatial axes (2-space as axis)	2	4	6	8	10	12	14	16
Difference of synthesis values of linear and spatial axis	-1	-1	0	2	5	9	14	20

Let us have a pause here and see that the above range of difference values is a sequential range, as that, the difference between the consecutive pair of above difference values comes to be (0, 1, 2, 3, 4, 5, 6, 7, ---)

Table of difference values of synthesis of equal number of linear and spatial axis

Number of axis	1	2	3	4	5	6	7	8
Synthesis value of linear axis (1-space as axis)	1	3	6	10	15	21	28	36
Synthesis value of spatial axes (2-space as axis)	2	4	6	8	10	12	14	16
Difference of synthesis values of linear and spatial axis	-1	-1	0	2	5	9	14	20
Difference of above difference values		0	1	2	3	4	5	6

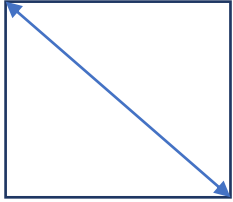
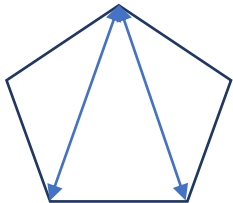
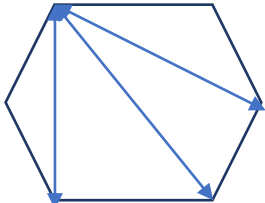
The above difference values range of linear and spatial order axes, infact is the difference values of any consecutive pair of dimensional orders. The difference values of dimensions of order n and of equal number of dimensions of order $n + 1$ remains the same as is the difference of values in respect of linear and spatial dimensions.

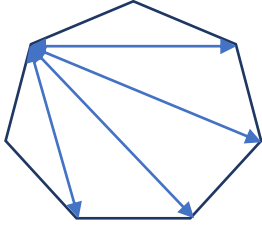
The above organization features hold even for the negative number of dimensions. One shall sit comfortably and to face to face with the phenomenon of negative number of dimensions, as one is comprehending the positive number of dimensions.

One shall visit the above table and fully imbibe the synthesis value of positive, zero and negative number of dimensions of a given order.

POLYGONS AND THEIR INTERNAL DIAGONALS

Let us visit the set ups of polygons (P4, polygons of four sides / square), (P5, polygons of five sides / Pentagon), (P6, hexagon -----).

<p>Polygon 4</p> 	<p>From each corner there is one internal diagonal. Four corners give 4 internal diagonals. Each diagonal has super imposition of pair of orientations, and as such becomes an interval / hyper cube 1. There are $4 / 2 = 2$ hyper cubes 1 / intervals of internal diagonals format.</p>
<p>Polygon 5</p> 	<p>From each corner there are two internal diagonals. Five corners give 10 internal diagonals. Each diagonal has super imposition of pair of orientations, and as such becomes an interval / hyper cube 1. There are $10 / 2 = 5$ hyper cubes 1 / intervals of internal diagonals format.</p> <p>Note :- Polygon 4 has 2 intervals of internal diagonals format.</p> <p>Polygon 5 has 5 intervals of internal diagonals format.</p> <p>As such polygon 5 has 3 intervals excess of the intervals of polygon 4.</p>
<p>Polygon 6</p> 	<p>From each corner there are three internal diagonals. Six corners give 18 internal diagonals. Each diagonal has super imposition of pair of orientations, and as such becomes an interval / hyper cube 1. There are $18 / 2 = 9$ hyper cubes 1 / intervals of internal diagonals format.</p> <p>Note :- Polygon 5 has 5 intervals of internal diagonals format.</p>

	<p>Polygon 6 has 9 intervals of internal diagonals format.</p> <p>As such polygon 6 has 4 intervals excess of the intervals of polygon 5.</p>
<p>Polygon 7</p> 	<p>From each corner there are four internal diagonals.</p> <p>Seven corners give 28 internal diagonals.</p> <p>Each diagonal has super imposition of pair of orientations, and as such becomes an interval / hyper cube 1.</p> <p>There are $28 / 2 = 14$ hyper cubes 1 / intervals of internal diagonals format.</p> <p>Note :- Polygon 6 has 9 intervals of internal diagonals format.</p> <p>Polygon 7 has 14 intervals of internal diagonals format.</p> <p>As such polygon 7 has 5 intervals excess of the intervals of polygon 6.</p>

Let us have a pause here and take note that the intervals of internal diagonals formats of polygon 4, 5, 6 and 7 are 2, 5, 9, 14. It will be blissful to take note that these values are parallel with the difference values of 4, 5, 6, 7 number of linear order dimensions and spatial order dimensions.

Number of axis	1	2	3	4	5	6	7	8
Synthesis value of linear axis (1-space as axis)	1	3	6	10	15	21	28	36
Synthesis value of spatial axes (2-space as axis)	2	4	6	8	10	12	14	16
Difference of synthesis values of linear and spatial axis	-1	-1	0	2	5	9	14	20

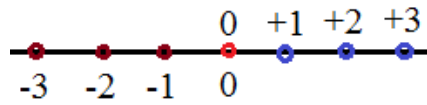
Let us visit the above parallels.

Let us imbibe these values.

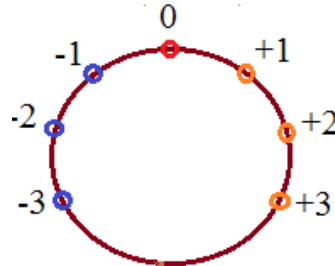
These values are the basis values, with this foundational set of values, we shall be chasing the applied values of Vedic mathematics.

8. Negative dimensional orders and Negative number of dimensions

Initially, positive, zero and negative numbers formatting along a line may be taken as of a parallel format for positive, zero and negative dimensional orders as well.



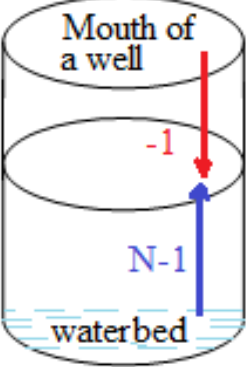

Along a circumference, the formatting may be as follows :



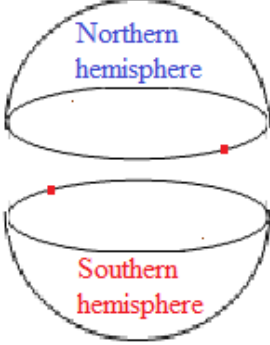
9. Place yourself at first floor and glimpse second floor and ground floor

	<p>To comprehend and conceive the conceptual base of negative dimensions and negative number of dimensions, one shall place oneself at first floor and glimpse the second floor and the ground floor.</p>
	<p>While glimpsing second floor, one shall be parallel with upwards steps progression as positive steps and parallel to it be comprehended and conceived the positive dimensional orders and the positive number of dimensions reach.</p>
	<p>While glimpsing the ground floor one shall comprehend and conceived a parallel comprehension of negative dimensional order and negative number of dimensions as sequential downwards steps from the first floor to be within and uptill the ground floor as a sequential reach.</p>

10. Place yourself parallel with mouth of a well and glimpse its waterbed

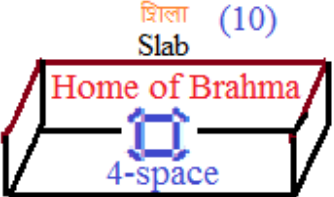
	<p>For comprehension of negative dimensional orders and negative number of dimensions, one may place at a parallel format at the level of the mouth of a well and to glimpse the waterbed of the well. Parallel to it one shall comprehend and conceive the negative number of dimensions parallel with the downward steps from mouth of well uptill waterbed. Parallel with it one shall also conceive the negative dimensional orders.</p>
	<p>The downward steps from mouth of the bed towards the waterbed of the well will sequentially make a depth for the water bed from the mouth being of decreasing values, say -1 step, -2 step, -3 step and -4 steps and so on for a reach from the bed uptill the mouth of the well.</p>

11. Place yourself at surface of northern hemisphere / southern hemisphere of earth


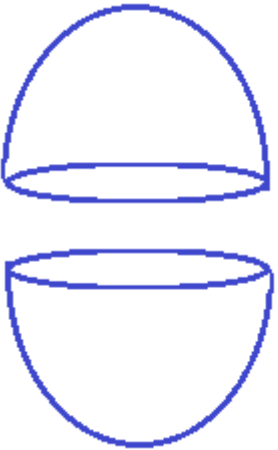
	<p>To comprehend and conceive the negative dimensional order and negative number of dimensions, one may place oneself, firstly upon the top surface of northern hemisphere and to glimpse the center of the Earth and parallel to it to conceive the sequential negative dimensional orders and sequential negative number of dimensions. Likewise one shall place at top surface of southern hemisphere and to glimpse the center of the Earth. For perfection of comprehension, one may have simultaneous glimpse and reach from the tops of northern hemisphere and southern hemisphere for a simultaneous glimpse of the center of the Earth.</p>
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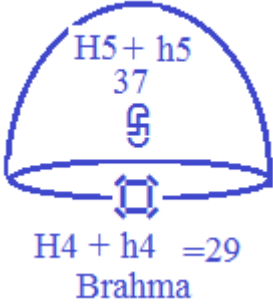
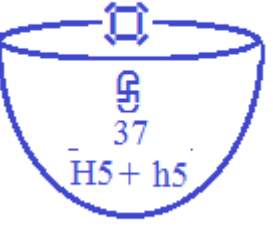
12. Glimpse the set up of 'शिला' / Slab and its 4-space center

	<p>Yog Vashisht, a Vedic scripture, preserves the home of Brahma at center of Shila a slab where Vidhadhari along with Vashisht had paid a visit and there was an enlightened dialogue about localized Brahmas and Universal Brahma. One shall sit comfortably and to permit the</p>
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 <p>शिला (10) Slab Home of Brahma 4-space</p>	<p>transcending mind to be parallel with the preservation of this enlightenment to perfect one's comprehension and imbibing of values about localized Brahmas (4-space bodies) and universal creator's space (4-space).</p>
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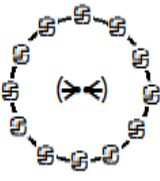
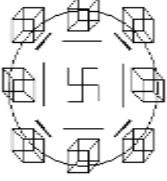
13. Glimpse the setup of Shlagram 'शालगराम'

	<p>Sadkhas fulfilled with intensity of urge to be parallel with Vedic systems shall visit the conceptual base of Shaligram 'शालगराम'. One shall be parallel with the organization format features of Shaligram 'शालगराम' as a geometric entity as well as a mathematical concept. One shall be parallel with the internal structural features and values of formulation Shaligram 'शालगराम'. It is of TCV ('शालगराम') = 29 = TCV (ब्रह्मा). The value 29 = H4 + h4 is the value of Transcendental lord (5-space lord in the role of origin of 4-space). Lord Brahma multiplies as ten Brahmas with the grace of Transcendental lord. Lord Brahma mediates within cavity of his own heart upon the seat of Transcendental lord and with the grace of Transcendental lord, Lord Brahma multiplies as ten brahmas.</p>
	<p>With transcendence of the Transcendental origin, 4-space domain splits into a pair of four dimensional frames. This transcendence phenomenon of Transcendental origin amounts to the split of the outer fold of the Transcendental domain as well. The pair of 4-space domains stand unified despite being separated and it is happening because of the inner fold of the Transcendental domain remaining intact. One shall sit comfortably and permit the transcending mind to glimpse and imbibe this Transcendental phenomenon of two distinct halves despite being distinct still remaining unified because of the inner fold of the Transcendental domain.</p>

<p style="text-align: center;">Sribhagwan</p> 	<p>The above Transcendental phenomenon as such makes each half of the creator's domain as a complete set up of values $H5+h5 = 37$ and $H4 + h4 = 29$ for the set up of each halves. One shall sit comfortably and permit the transcending mind and to be parallel with unique Transcendental phenomenon.</p>
<p style="text-align: center;">Brahma</p> <p style="text-align: center;">$H4 + h4 = 29$</p>  <p style="text-align: center;">Sribhagwan</p>	<p>It will be a blissful exercise to express oneself about the Transcendental phenomenon of happening within each of the hemisphere.</p>

14. Glimpse Kapil Rishi Ashram at Center of the Earth

‘कपिल ऋषि आश्रम’

कपिल	ऋषि	आश्रम	Sadhkas fulfilled with intensity of urge to be parallel with Vedic knowledge systems organization shall visit ‘कपिल ऋषि आश्रम’ at center of the earth. One shall visit the formulation ‘कपिल ऋषि आश्रम’ and by being parallel with values and features of this formulation shall perfect one's intelligence with perfection of one's insight about these formulations.
15	12	16	
			
1×3 $\times 5$	$A^6:12B^5$	2^4	

