VM006-Doc011

Vedic Mathematics, Science & Technology Teacher Course

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STRUCTURED POINTS

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

33. Points of interval, square and cube
34. Concept of structured point
35. Dual status of centre of a cube
36. Revisit Synthesis of 2, 4 & 8 cubes/ 8 sub cubes as a cube.

The values being covered are to be taught as lessons numbers 33 to 36 to the students of 3-space Vedic Mathematics, Science & Technology.

LESSON-33

POINTS OF INTERVAL SQUARE AND CUBE

1. Point of interval has length, howsoever small it may be.
2. Point of a square has area howsoever small it may be.
3. Point of a cube has volume howsoever small it may be.
4. Line within a cube is a set up of points of a cube.
5. Square within a cube is a set up of the point of the cube.
6. This will help us distinguish points of interval within cube and of an interval outside the cube.
7. Likewise, it will also help us distinguish point of a square within a cube from that of a square outside the cube.

8. Likewise the point of interval within square is distinguishable from the point of interval outside the square.
9. Further interval provides a format for setting of the points devoid of length.
10. Likewise square provides a format for setting of points devoid of area, as well as devoid of length.
11. Cube provides a format for setting of points devoid of volume, as well as devoid of area and also devoid of length.
12. It would be a blissful exercise to distinguish interval as a format for setting of points devoid of length from the interval as the set up of points imbedded with length, howsoever small the same may be.
13. A step ahead, it would be a blissful exercise to distinguish square as a format for setting of points of interval devoid of area from that of a square as a set up of points imbedded with area howsoever small it may be.
14. And further it would also be a very blissful exercise to distinguish cube as a format for setting of surface plates devoid of volume from that of cube as a set up of point imbedded with volume howsoever small the same may be.

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LESSON-34
CONCEPT OF STRUCTURED POINT

1. The concept of a structured point is the basic concept.
2. Point of a line is imbedded with the structures of a line.
3. The point of square is imbedded with the structures of an area.
4. Point of cube is imbedded with the structures of volume.

5. Point devoid of structures of volume is not the point of cube
6. Point devoid of structures of area is not a point of square.
7. Point devoid of structures of length is not a point of an interval.
8. A point devoid of structures of volume, area and length may be designated as a void point or a point simpliciter, outside the 3 dimensional frames.
9. Point within a 3 dimensional frame may get fulfilled with structures because of a single axis and by a pair of axes and even due to the presence of all the 3 axes.

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LESSON-35

DUAL STATUS OF CENTRE OF A CUBE

1. Centre of the cube is uniquely placed being at an equal distance from all the corner points of the cube.
2. This unique placement of centre distinguishes it from all other points of the cube.
3. This uniqueness makes centre to be of a dual status, firstly like all other points of the cube and secondly because of its uniqueness from all other points of the cube.
4. Centre of the cube is the collapse point of all the corner points of the cube.
5. In fact centre is the collapse point of the cube itself.
6. Cube is the seat of inner most corner points of all 8 sub cubes of the cube.

7. This way centre of the cube gets enveloped by super imposition of the inner most corner point of the sub cubes.
8. This makes 9 point fixation for the centre of the cube.
9. Placement space of the centre of the cube with its enveloping by 8 inner most corner points of sub cubes makes centre of the cube as a placement seat devoid of the structures of the cube points.
10. This status of the centre of the cube as placement seat of space beneath the centre as point of the cube brings to focus the nature of dual status of the centre of the cube.
11. This makes status of centre of the cube being parallel to the status of origin of dimensional frame of 3-space and also further being parallel to that of the origin of 3-space itself as well.
12. It brings to focus the feature of seat of centre of cube being enveloped within a solid boundary of 8 components (sub cubes of the cubes) itself.
13. Cube itself is enveloped by 6 surface plates.
14. Each surface plates of cube is enveloped by 4 intervals (edges) as boundary line of a square.
15. Each edge is bounded by a pair of end points (corner points).
16. It makes a blissful sequence that edges are bounded by a pair of corner points, surface plates are bounded by 4 edges, volume of the cube is enveloped by 6 surface plates and centre of the cube is enveloped by 8 sub cubes.
17. It would be blissful to comprehend and imbibe this feature of pair of end points, 2 pairs of boundary lines, 3 pairs of surfaces and 4 pairs of solids (sub cubes). All marking their presence simultaneously in the structural

set up of the cube as the representative regular body of 3-space within a 3 dimensional frame of 3 axes.

18. It would be blissful to take note that these sequential values of 2 points, 4 lines, 6 surfaces and 8 solids at the boundary in fact are sequentially taking us to interval as 1 space body of single axis format, surface as a 2 space body of a pair of axes format, cube as a 3 space body of 3 axes format and ahead there being a 4 space body accepting solids at its boundary, while solid itself is accepting surfaces at its boundary and surfaces are accepting lines at their boundary and lines themselves are accepting points at their boundary.
19. It is blissful that, that way, we have reached a step ahead of solids, a step which takes us in a space ahead of 3-space.

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LESSON-36

REVISIT SYNTHESIS OF 2, 4 & 8 CUBES / 8 SUB CUBES AS A CUBE

1. A cube is a structural set up of 8 corner points, 12 edges, 6 surfaces and 1 volume, together making it a set up of 27 structural components.
2. When 2 cubes of 27 structural components each are synthesized together with one of the surface plate being the common separating surface for both the cubes, it shall be dispensing with the structural components of one of the surface plate.
3. One surface plate is (a square) is a set up of 9 structural components namely 4 corner points, 4 edges and 1 surface area.

4. Therefore, a pair of cubes of 27 structural components each, together making a set of 27+27= 54 structural components, on their synthesis will get reduced to a synthetic set up of a pair of cubes being of 27+27-9= 45 structural components only.
5. It may be taken as that the first cube contributes its all the 27 structural components while the second cube to contribute only 27-9= 18 components only.
6. This synthetic set up of a pair of cubes, as of 45 structural components will be of following classification for these structural components:

Cube	Corner points	Edges	Surfaces	Volume	Total
First	8	12	6	1	27
Second	4	8	5	1	18
Total:	12	20	11	2	45

7. Now when third cube is synthesized with the above set up of a pair of cubes, there would be a further contribution of 18 structural components by the third cube.
8. One may note that while third cube will be synthesizing itself with the above synthetic set up of a pair of cubes, the structural component of one of the surface plate will get dispensed with.

9. The resultant structural component of synthetic set up of 3 cubes would be as of 27+18+18= 63 structural components accepting classification as under:

Cube	Corner points	Edges	Surfaces	Volume	Total
First	8	12	6	1	27
Second	4	8	5	1	18
Third	4	8	5	1	18
Total:	16	28	16	3	63

10. Now when one more cube, namely fourth cube would be synthesized with the above synthetic set up of 3 cubes, the contribution because of the fourth cube would be only of 12 structural components, as in this situation 2 of the surface plates will get dispensed with.
11. As a result, the synthetic set up of 4 cubes will make a set up of 75 structural components accepting following classification:

Cube	Corner points	Edges	Surfaces	Volume	Total
First	8	12	6	1	27
Second	4	8	5	1	18
Third	4	8	5	1	18

Fourth	2	5	4	1	12
Total:	18	33	20	4	75

12. A step ahead, when fifth cube would be synthesized with the above synthetic set up of 4 cubes, it shall be contributing only 18 structural components and thereby making synthetic set up of 5 cubes being of 75+18 = 93 structural components accepting following classification:

Cube	Corner points	Edges	Surfaces	Volume	Total
First	8	12	6	1	27
Second	4	8	5	1	18
Third	4	8	5	1	18
Fourth	2	5	4	1	12
Fifth	4	8	5	1	18
Total:	22	41	25	5	93

13. A step ahead, synthetic set up of 6 cubes is going to be a structural set up of 105 structural components of following classification:

Cube	Corner points	Edges	Surfaces	Volume	Total
First	8	12	6	1	27
Second	4	8	5	1	18
Third	4	8	5	1	18
Fourth	2	5	4	1	12
Fifth	4	8	5	1	18
Sixth	2	5	4	1	12
Total:	24	46	29	6	105

14. . A step ahead, synthetic set up of 7 cubes is going to be a structural set up of 117 structural components of following classification:

Cube	Corner points	Edges	Surfaces	Volume	Total
First	8	12	6	1	27
Second	4	8	5	1	18
Third	4	8	5	1	18
Fourth	2	5	4	1	12
Fifth	4	8	5	1	18
Sixth	2	5	4	1	12

Seventh	2	5	4	1	12
Total:	26	51	33	7	117

15. Finally the synthetic set up of 8 cubes/sub cubes, as a cube shall be becoming a structural set up of 125 structural components accepting following classification:

Cube	Corner points	Edges	Surfaces	Volume	Total
First	8	12	6	1	27
Second	4	8	5	1	18
Third	4	8	5	1	18
Fourth	2	5	4	1	12
Fifth	4	8	5	1	18
Sixth	2	5	4	1	12
Seventh	2	5	4	1	12
Eighth	1	3	3	1	8
Total:	27	54	36	8	125

16. It would be blissful to take note that $8 = 2^3$ number of cubes synthesize a structural set up of $125 = 5^3$ number of structural components.
17. One may have a pause here that square as 2 space body as linear boundary of 4 components and this makes 5 versions of square parallel to presence of boundary components of (4, 3, 2, 1, 0) in number and it will help us acquire insight as to the feature of 2^3 number of cubes synthesizing a structural set up of 5^3 structural components.
18. It would be a blissful exercise to chase further as that, ($3^3 = 27$) cubes shall be synthesizing a structural set up of ($7^3 = 343$) structural components.
19. Here it would be blissful to take note that cube; the representative regular body of 3-space accepts 7 versions.
20. A step ahead, 4^3 numbers of cubes synthesize a structural set up of 9^3 structural components and that 4 space body as 9 versions.
21. In general N^3 cubes synthesize a structural set up of $(2N+1)^3$ structural components.

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