

## ORGANIZATION FORMAT OF GANITA SUTRAS

### Step – 18: Ganita Sutra-2 and Ganita Sutra-1

1. Going from Ganita Sutra-1 to Ganita Sutra-2 is a transition from a linear sequencing to place value organization.
2. It would be a blissful exercise to chase this transition, firstly from value of artifice 16 supplied by range of 16 letters of the text of Ganita Sutra-1 to the value of artifice 28 supplied by range of 28 letters of the text of Ganita Sutra-2.
3. Here it would be relevant to note that  $16 = 4 \times 4$  while  $28 = 4 \times 7$  and that along  $4 \times 4$  format, range of 1 to 7 is to be availed as that this format would be accommodating 4 manifestation layers simultaneously as :

1	2	3	4
2	3	4	5
3	4	5	6
4	5	6	7

4. The above format is of features  $4 \times 4$  grid with summation value for four manifestation layers of four folds each with summation values  $1+2+3+4=10$ ,  $2+3+4+5=14$ ,  $3+4+5+6=18$  and  $4+5+6+7 = 22$  with grand summation value  $10+ 14 + 18 + 22 = 64 = 4 \times 4 \times 4$  provides transition from  $4 \times 4$  grid format to  $4 \times 4 \times 4$  grid format parallel to a transition from spatial order to solid order.
5. Further that, a step ahead, it would be like going from 6-space as domain to 4-space as its dimension, a hyper dimensional order.
6. In other words it is going from a measuring rod (of domain features) to measure of the measuring rod (of the format of dimension features).
7. The reverse transition from going from Ganita Sutra-2 to Ganita Sutra-1, that way would be going back from dimension fold to domain fold.

8. The place value system avails numerals and place value, while the linear sequencing simply avails a rule 'one more than before' / a step ahead.
9. Naturally for the rule and order of 'a step ahead', every step would expect a distinct values set and that way there would be a need of infinitely many such packages.
10. The place value as well is a package / bag of values and then its inherent feature of repeated applications is ultimately reaching at a parallel rule of 'one more than before though not at the base but at index as is availed as  $10^1$ ,  $10^2$ ,  $10^3$ , and so on in case of ten place value system.
11. Therefore the transition from Ganita Sutra-1 to Ganita Sutra-2 may be viewed as a transition from '01' to '10' and the transition from Ganita Sutra-2 to Ganita Sutra-1 would be the other way round of transiting from '10' to '01'.
12. This, that way focuses is upon the handling of the reflection pair (01, 10).
13. Here it would be relevant to note that it would be ultimately taking us to a format for the manifestation of the last organisation step of the text of Ganita Sutras including Ganita Upsutras, that is of Ganita Upsutra-13 'गुणितसमुच्चयः समुच्चयगुणितः (*GunitaSamuccaya Samuccayagunitah*)'.
14. Here, like '0' and '1' digits, formulations गुणित 'Gunita' and समुच्चयः 'Samuccaya' are swapping their places in respect of the formulations (i) 'गुणितसमुच्चयः (*GunitaSamuccaya*)' and (ii) 'समुच्चयगुणितः (*Samuccayagunitah*)'.
15. It would be a blissful exercise to reach at the simple steps for expressions for  $1/9$ ,  $1/19$ ,  $1/29$  and so on, in the light of the transition reach for it in terms of a transition from Ganita Sutra-2 to Ganita Sutra-1.
16. Let us first take up  
Case of  $1/9$   
 $10 = 9+1$ ,  
 $10/9 = 1 + 1/9$

Case 1/19

$$20=19+1;$$

$$20/19=1+1/19; 10/19 = \frac{1}{2} (1+1/19)$$

Case 1/29

$$30= 29 + 1$$

$$30/29=1+1/29; = 1/3 (1+1/29)$$

Case 1/39

$$40= 39 + 1$$

$$40/39=1+1/39; = 1/4 (1+1/39)$$

17. From above values equations it clearly emerges that in case of 1/9, the factor is 1/1, in case of 1/19, the factor is 1/2, in case of 1/29, the factor is 1/3 and in case of 1/39 the factor is 1/4 and so on.

18. The factors sequence 1/1, 1/2, 1/3, 1/4 , --- in itself speaks that the denominators are obeying the rule 'one more than before' as much as that for 1/9 the denominator factor is 0+1, in case of 1/19 , the denominator factor is 1+1, and so on.

19. The approach to the middle being permissible from the either end with equal value steps as is the organization format of letters ranges of 3 words of the text of Ganita Sutra-2 as triple (7, 14, 7), so the factors sequence '1, 2, 3, 4-- -' shall be equally applicable while reaching the values of 1/ 9, 1/19, 1/29 and so on from right to left or from left to right.

20. That the only difference would be that while in case the approach would be from right to left, the factor would apply in the denominator and on the other end, in case of approach from left to right, it would apply, it would be in the numerator.

21. In other words, in case of 1/19, while approaching right to left, there would be a division by 2 at each step, however in case the approach would be from left to right than there is going to be a multiplication by 2 at every step.

22. Similarly in case of 129 there would be division or multiplication by 3 at every step of approach from right to left and from left to right respectively.
23. Likewise would be the rule for other sequential expressions for  $1/39$ ,  $1/49$  and so on.
24. One may have a pause here and have a comprehensive look at the triple values (7, 14, 7) parallel to letters ranges of three words text of Ganita Sutra-2 and one shall be face to face with the features of triple (7, 14, 7) permitting re-organization (7, 7+7, 7). And parallel to it would be of the format of an interval which accepts spatial format for its middle.
25. It is this feature of the format of the middle which shall be making available a pair of opposite orientations super imposition at the middle.
26. It is this super imposition of opposite orientations for the middle, which shall be responsible for the 'division' for approach from right to left and 'multiplication' for the approach from left to right as that 'division' and 'multiplication' are operations of opposite orientations, as much as that while 'multiplication' is repetitive addition, on the other hand, 'division' is a repetitive subtraction.
27. It would be a blissful exercise to reach at working steps for decimal expressions for  $1/8$ ,  $1/18$ ,  $1/28$  and so on as well as for  $1/7$ ,  $1/17$ ,  $1/27$  and so on by having augmentation of the proportionally symmetry rule of Ganita Upsutra-1 with the place value rule of Ganita Sutra-2 in the light of  $10-8=2$  and  $10-7=3$  and so on.
28. One may have a pause here and have a fresh look at the sequential set up of Ganita Sutras as well as of Ganita Upsutras.
29. While the immediate augmentation for Ganita Sutra-1 is to be three fold respectively in reference to Ganita Upsutra -1, Ganita Upsutra -2 and Ganita Sutra-2 but in case of Ganita Sutra-2 the immediate augmentation is to follow five fold, firstly from Ganita Sutra-1, secondly from Ganita upsutra-

1, thirdly from Ganita Upsutra-2 fourthly from Ganita Upsutra-3 and finally from Ganita Upsutra-3.

30. One may have a pause and see that such five fold augmentation would follow from Ganita Sutra-3 onwards as well but uptill the reach of Ganita Upsutra-13.

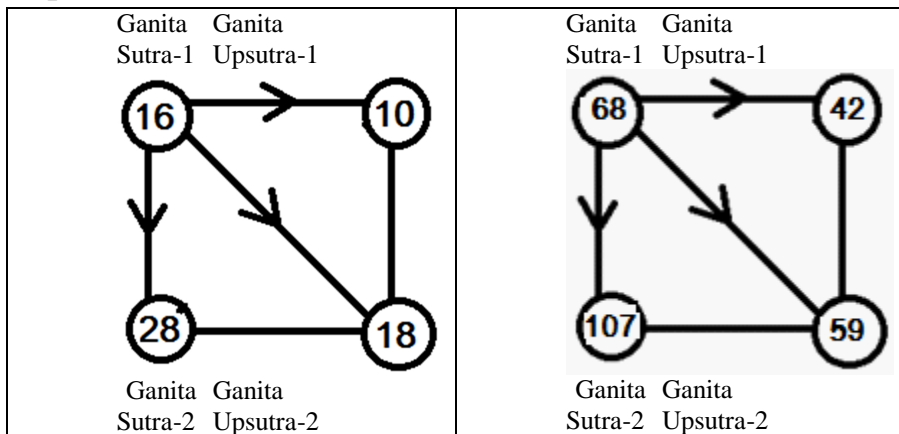
31. Further it would be blissful to take note that the augmentation amongst the immediate pair of Ganita Sutras is to be straight way two fold parallel to pair of orientations of coordination between the pair of 'immediate-pair' of Sutras.

32. Illustratively in the context of Ganita Sutra-1 and 2 the first augmentation would be as transition from Ganita Sutra-1 to Ganita Sutra-2 and the other way round the same would be of the form of back transition from Ganita Sutra-2 to Ganita Sutra-1.

33. These transition features may be, initially in the light of the letters being availed by the text of Sutras (and Upsutras), and then the same may be in the light of the transcendental values index for the text of Sutras and Upsutras.

34. Illustratively, in the context of Ganita Sutra-1, same may be depicted for coordination of transition flow lines as follows:

In reference to the letters ranges, as well as in reference to transcendental values index of Ganita Sutra-1, Ganita Sutra-2, Ganita Sutra-1 and Ganita Upsutra-2



35. Likewise the transition from Ganita Sutra-2 to Ganita Sutra-1, Ganita Upsutra-1, Ganita Upsutra-2, Ganita Sutra-3 and Ganita Sutra-3 may be chased for reaching at different features of organization format of Ganita Sutras and Upsutras in reference to Ganita Sutra-2.

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