



## Vedic Mathematics in Modern Era

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### Abstract:

*Vedic mathematics is an ancient scheme based on 16 formulas (sutras). These are easy & simple methods for fast mental calculations. Many researcher have worked on it for its usefulness in various branches like engineering, astronomy, mathematics.*

*Vedic mathematics helps in faster and accurate mental calculations. By this 16 sutras & 13 up sutras. One can solve any difficult equation in addition, division, multiplication, algebra, trigonometry, square, square root, cube, cube root only by mental calculations. Today's era is fastest growing & ever changings era. In competitive exam's like UPSC, GPSC, CET, GATE, JEE & many other vedic maths help in faster mental calculations & helps to reduce time to solve difficult mathematical equations. Vedic mathematics also solve mathematical anxiety among school children & regain interest in math by making mathematics easier. In modern time many researches carried out in many universities of India & abroad on usefulness of India & abroad on usefulness of vedic maths. Many universities have started courses based on vedic maths, yoga & vedic literature which gain interest on vedic subject of students. Our nationalist prime minister Shree Narendra Modiji & HRD minister Ms Smriti Irani also taking interest for vedic formulas & yoga to become popular in world. Many school included vedic maths & yoga in their curriculum. Which is accepted by students & parent & teachers well.*

*Present paper deals with exhaustive review of literature based on vedic mathematics. It shows vedic mathematics can be useful for fastest growing & even changing world in modern era. Vedic mathematic algorithm can be proved efficient for faster mental calculations & for competitive exams.*

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Vedic mathematics is the surname given to a supposedly ancient system of calculation which was "rediscovered" from the vedas between 1911 and 1918 by Shri Bharati Krishna Tirthaji Maharaj (1884-1960). According to Tirthaji, all of vedic mathematics is based on sixteen sutras or word formulae, "Urdhvatiyak" is one of these sutra. These formulae are intended to describe the way the mind naturally works. and are therefore supposed to be great help in directing the students to the appropriate method of solution. None of these sutras has ever been found in vedic literature, nor are its methods consistent with known mathematical knowledge from the vedic era.

Vedic matematics, a set of supposedly ancient techniques that help even the most numerically challenged to conquer difficult sums, is surging in popularity in india. So, from next mouth, three indian universities will begin to offer courses in vedic calculations while home learners can watch an entire television channel devoted to the subject on one of india's digital networks. Several thousand teachers have been recruited for private college courses. Its supporters believe vedic maths could become a major export like yoga and curry.

The rising popularity of vedic maths is partly because of a renewed campaign by the nationalist prime minister, Shree Narandra Modi, to lay India's claim to the cornerstones of human knowledge. He marked India's successful mission to Mars last year by claiming its ancient vedic scientists had conceived of air travel thousand of years before the wright Brothers made their first flight. It was a reference to a disputed 'veda' which described ancient air travel between indian cities and to other planets. More recently Mr. Modi said Lord Ganesha, the elephant headed Hindu God, was evidence of early indian knowledge of plastic surgery. There have also been claims that algebra, trigonometry, pythagoras' theorem, the concept of zero and dicimal system all originated in India.

The verses are guide to turn difficult sums into quick mental maths using simple rules. The Nikhilam Navatashcaramam Dashatah - "all from nine, last from ten". for example, speeds the multiplication of large numbers by breaking them down to their common bases : (1) To multiply 48 by 52, the numbers are borken into (50-2) and (50+2) and the square of the smaller sum (4) subtracted from the square of the larger (2,500) to reach the answer of 2,496.

Similarly, division is simplified by multiplying the denominator into a base ten number:  $44/25 = 176/100 = 1.76$  (2) Find  $9 \times 8$  than (i) select a base which is nearest to given numbers. Here base = 10 (ii) Subtract each of the numbers to be multiplied from base. Here  $10 - 9 = 1$ ,  $10 - 8 = 2$ . These deficiency numbers are written as shown.

$$9 : \bar{1}$$

$$8 : \bar{2}$$

$$7 : 2$$

$$\text{than } 9 \times 8 = 72$$

Having dealt in fairly sufficient detail with the application of the Nikhilam Sutra etc. to special cases of multiplication, we now process to deal with the Urdhva Tiryagbhyam sutra which is the General Formula applicable to all cases of multiplication. The formula itself is very short and terse, consisting of only one compound word and means. "vertically and crosswise" The applications of this brief and terse sutra are manifold.

A simple example will suffice to clarify the modus operandi there of suppose we have to multiply 12 by 13 : (i) We multiply the left hand most digit (1) of the multiplicand and vertically by the left hand most digit (1) of the multiplier, get their product (1) and set it down as the left hand most part of the answer.

$$12$$

$$\times 13$$

$$1:3+2:6 = 156$$

(ii) We then multiply 1 and 3, and 1 and 2 cross-wise add the two, get 5 as the sum and set it down as the middle part of the answer and

(iii) We multiply 2 and 3 vertically, get 6 as their product and put it down as the last (the right-hand most) part of the answer. Thus,  $12 \times 13 = 156$ .

We thus follow a process of ascent and of descent going forward with the digits on the upper row and coming rearward with digits on the lower raw.

The simplicity of vedic mathematics means that calculations can be carried out mentally. There are many advantages in using a flexible, mental system. Pupils can invent their own methods, they are not limited to one 'correct' method. This leads to more creative, interested and intelligent pupils. Interest in the vedic system is growing in education where mathematics teachers are looking for something better and finding the vedic system is the answer.

Research is being carried out in many areas including the effects of learning vedic maths on children, developing new, powerful but easy applications of the vedic sutras in geometry, calculus, computing etc. But the real beauty and effectiveness of vedic mathematics cannot be fully appreciated without actually practising the system. One can then see that it is perhaps the most refined and efficient mathematical system possible.

In the light of the human resources development minister Smriti Irani bringing to the fore front the need for some Indianisation of the school curriculum, together with the inclusion of vedic maths, it is necessary for a greater understanding of what this subject is about. To date, there has been a groundswell of grass roots interest in this particularly in India, but there has also been serious criticism of “Vedicness”.

Thus criticism was recently highlighted in the article in The Hindu by professor C.K.Raju ( “> Nothing vedic in “Vedic Maths,” sept. 3)

Vedic maths is concerned with a universal structure of maths revealed through a personal approach to problem solving and other fields of human activity. It is described by a small collection of aphorisms called sutras. Sutras express naturally occurring mental processes by which mathematical problems can be solved with the least effort. Vedic maths does not advocate the sole use of blanket methods through which students can reduce problems to merely mechanical responses to giving stimuli. Instead it encourages an intelligent and holistic approach one that engenders reason and develops strategic thinking. If you find that a problem can be solved by an easier or different method from what is commonly taught, then that is used as a valid method, even if the problem is solved just by inspection. The sutras describe such principles and methods.

Each sutra covers a wide range of applications and the recognition of the same underlying thought pattern at work has the effect of unifying diverse aspects of maths.

“Vedic maths is not historical and is not about mathematical tricks; it provides insight into the very nature of the subject and the human psyche.”

It must be emphasised that vedic maths highlights the mental processes and principles that take place in the mind of anyone engaged in mathematical activity. These processes are not random and haphazard but are reasonable, ordered and yet highly flexible.

Prof. Raju claims that Bharati Krishna Tirtha’s Book, “Vedic mathematics” states that the sutras are not to be found in the vedas. In fact the general editor of the text states that this work “deserves to be regarded as a new parishista by itself.” Since it is not to be found in any known or published parishistas. However on page 231 of “Vedic Metaphysics” Tirthaji states that he found all 16 sutras in the sthapatya-veda in connection with astronomy. It is quite feasible that this is not a published source. Prof. Raju’s expertise and knowledge of the history of Indian mathematics is of the highest standard. He points out that India has a brilliant past with regard to the development of maths. So much so that even now there are research programmes, for example at IIT in Mumbai, looking into the vast knowledge base of mathematics of Kerala spanning nearly a 1000 years. But the history of maths is not what vedic maths is about at all. These sutras of Tirthaji reveal the real deal; they show the principles and laws behind mathematics and mathematical activity as it happens in the present.

Ms Irani has every right to explore the avenues which this new and attractive approach to Maths offers. It will be interesting to see how this unfolds in schools.

In modern era, many summer camps organised based on vedic mathematical calculations for easy & interesting calculations for students. And parents are now going to take interest in this method as this method makes calculation easy & it eleviates students maths fear. Vedic mathematical calculations is also helpful in compatitive exam like UPSC, GPSC, CET etc. It helps in easy calculations of complex mathematical equations & save times of students in these competitive exams. Vedic maths offer students the extra edge that general mathematics might not be able to provide them with, Such is the versatility of vedic mathematics in that; even scientists from NASA have applied certain principles of vedic mathematics in the real in of artificial intelligence.

These days, Vedic mathematics is being taught at school level and special attention is provided to students those who want to learn more about the subject. Vedic mathematics can be learnt with very little efforts and that also with in a very short span. even now, in the twenty first century, vedic mathematics continues to be the center of attention and many researches are carried out in multiple areas of vedic maths of researchers.

### Conclusion

In India, people were less aware of vedic mathematics. Many schools have realized the importance of vedic mathemaths. Many School and Educational Institutions have adopted vedic mathematic in their curriculum. India has also vedic culture and hence schools are coming forward to adopt vedic mathematics but there is still great shortage of vedic mathematics trainers / teachers in India. This scenario gives great opportanity to teachers to expand their profile.

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