

Review Article

Comparative Analysis of Techniques of Vedic Mathematics

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Abstract - Vedic mathematics from the ancient times of the Vedas made the mental calculation of mathematical expressions possible. In this paper we are going to present the analysis of ancient time mathematics.

Keywords - Vedic mathematics, Sutras, Square roots, Cube roots, Algorithm.

I. INTRODUCTION

Vedic mathematics comes from the Vedas, especially the Atharva Vedas. It was revived by Jagat Guru Sri Bharti Krishna Tirthaji between the years 1911-1918. His book called 'Vedic Mathematics' was published in 1965. This book contains 16 formulas and 13 sub-formulae. Apart from this Rig Veda also contains Vedic formula. According to Krishna Tirtha, he gained knowledge of the Vedic Sutras while meditating in a forest near Singeri for 8 years. He planned to write many sutras but cataract developed in both eyes and he passed away in 1960.

II. ANALYSIS OF VEDIC MATHEMATICS

Vedic mathematics is an ancient technique that simplifies multiplication, square roots, addition, cube roots, divisibility, recurring decimals, cubing, auxiliary fractions and complex numbers. It provides answers in one line by skipping several steps of traditional mathematics. There are six Vedanganas. The Jyotish Shastras is one of the six. Vedic math is a part of Jyotish Shastra. The beauty of Vedic mathematics lies in its simplicity. All calculations can be done on pen and paper. It sharpens the mind, focus and memory. Difficult arithmetic problems and huge sums can be solved by Tirthaji's methods. These striking and beautiful methods are a part of a system of arithmetic which Tirthaji claims to be far more methodical than modern system. Vedic Mathematics is said to be many faced coherent and unified structure of arithmetic and its methods are complimentary, direct and easy. The simplicity of the Vedic system means that calculations can be carried out mentally though the methods can also be written down. There are many advantages in using a flexible mental system. Students can invent their own methods. This leads to more creative and intelligent students. Research is being carried out in many areas including the effects of learning the Tirthaji's system has on children, developing new powerful but easy applications of these Sutras in arithmetic and algebra. Some researchers used Vedic mathematics to detect breast cancer.

III. SUTRAS OF VEDIC MATHEMATICS

The sixteen sutras of Vedic Mathematics:

1. *Ekadhikina Purvena*
(Corollary: Anurupyena)
Meaning: By one more than the previous one
2. *Nikhilam Navatashcaramam Dashatah*
(Corollary: Sisyate Sesasamjnah)
Meaning: All from 9 and the last from 10
3. *Urdhva-Tiryagbyham*
(Corollary: Adyamadyenantyamantyaena)
Meaning: Vertically and crosswise
4. *Paraavartya Yojayet*
(Corollary: Kevalaih Saptakam Gunyat)
Meaning: Transpose and adjust



5. *Shunyam Saamyasamuccaye*
(Corollary: Vestanam)
Meaning: When the sum is the same that sum is zero
6. *(Anurupye) Shunyamanyat*
(Corollary: Yavadunam Tavadunam)
Meaning: If one is in ratio, the other is zero
7. *Sankalana-vyavakalanabhyam*
(Corollary: Yavadunam Tavadunikritya Varga Yojayet)
Meaning: By addition and by subtraction
8. *Puranapurabyham*
(Corollary: Antyayordashake'pi)
Meaning: By the completion or non-completion
9. *Chalana-Kalanabyham*
(Corollary: Antyayoreva)
Meaning: Differences and Similarities
10. *Yaavadunam*
(Corollary: Samuccayagunitah)
Meaning: Whatever the extent of its deficiency
11. *Vyashitsamanstih*
(Corollary: Lopanasthapanabhyam)
Meaning: Part and Whole
12. *Shesanyankena Charamena*
(Corollary: Vilokanam)
Meaning: The remainders by the last digit
13. *Sopaantyadvayamantyam*
(Corollary: Gunitasamuccayah Samuccayagunitah)
Meaning: The ultimate and twice the penultimate
14. *Ekanyunena Purvena*
(Corollary: Dhvajanka)
Meaning: By one less than the previous one
15. *Gunitasamuchyah*
(Corollary: Dwandwa Yoga)
Meaning: The product of the sum is equal to the sum of the product
16. *Gunakasamuchyah*
(Corollary: Adyam Antyam Madhyam)
Meaning: The factors of the sum is equal to the sum of the factors

IV. NECESSITY OF VEDIC MATHEMATICS

- It helps a person to solve mathematical problems faster.
- It helps in making intelligent decisions to both simple and complex problems.
- It reduces the burden of memorizing difficult concepts.
- It increases the concentration and determination of a person to learn and develop his skills.
- It helps in reducing silly mistakes which are often created by kids.

V. CONCLUSION

Vedic mathematics is certainly more integrated, efficient and fun than conventional mathematics. It increases mental ability and brings out the creativity. There is no single method to follow in vedic mathematics, one can keep creating new methods. But still, Vedic mathematics is not very popular as it is thought to be ancient. So let us start using Vedic mathetics and start loving mathematics.

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