



Use of Vedic Mathematics in Geometry Problems

Dr.Kishan Singh Shekhawat

Associate Professor

S.K. Govt. Girls College, Sikar, Rajasthan-332001, India.

(Pandit Deendayal Upadhyaya Shekhawati university sikar Rajasthan India)

Dr.Subhash Yadav(Associate Professor)

Assistant Director (Commissionerate)

College education of Rajasthan, Jaipur-302004, India

Babu lal Choudhary

Research Scholar

Pandit Deendayal Upadhyaya Shekhawati university sikar Rajasthan, India

Abstract

A historic gadget of Indian mathematics is known as Vedic mathematics. Vedic mathematics isn't simply a state-of-the-art pedagogic and studies tool but also an introduction to historical civilization. It retakes us again to many millennid of India's mathematical heritage. The primary reality about vedic arithmetic became, for any hard trouble the answer need to be calculated in one line. Using the *Sūtras* of vedic math we can make tough mathematical calculations in a completely easy and easy manner and to executing them mentally. Usually vedic mathematics sutras takes less strength, silicon vicinity and it's miles high velocity whilst comparing to various other multipliers.

Keyword: *Parāvartya sutra*, *Ādyam*, *Antyam* and *Mādhyam*

1.Introduction:

Mathematics is the mother of all sciences as it holds the solution to all of the issues which can be faced by means of the human race. Indian Mathematics belongs not handiest to hoary antiquity but is a dwelling discipline with the ability for manifold current programs. It takes its inspiration from the pioneering, even though the unfinished task of Bharati Krishna Tirthaji, a former Sankaracharya of puri of respected memory who reconstructed a completely unique system on the idea of ancient Indian subculture of Mathematics.[1]

The most commonplace definition of Veda is “knowledge”. Vedas are a set of texts which have these days been found to be highly organized both internally and of their connection with one another. Vedic Mathematics is a philosophy and math system primarily based on sixteen formulae and thirteen sub formulation with a fundamental concept and rule. The Vedic mathematical system procedures are based on each current and historical mathematical structures. Every formulation describes an intellectual running idea that can be used to resolve a variety of mathematical problems. It is named vedic Mathematics due to the fact the structure of mathematics is located from historic vedic literature. Vedic Mathematics Sutras enable us to clear up all mathematical complications without pen and paper work in few steps. The vedic technique is easy in basic terms intellectual and brief.

Students are unable to boost up the calculations process although they understand the problem. A set of twenty five competitive examination writing students are given a few fundamental mathematical calculations such as multiplication, square root and asked to solve and told to resolve questions without and with the use vedic methods approach in their paper. The time it takes to perform the calculations before and after utilizing vedic method technique is measured in minutes and a paired t-test is used to examine the consequences. Their study indicates that while doing basic mathematical operations, using the vedic techniques drastically accelerates computations.[2] Ajai Kumar Shukla and colleagues check out historic Indian mathematical structures known as Vedic mathematics, which had been observed in the early 20th century from the Atharvaveda, an old Indian book. The purpose of the study was to assess the efficacy of teaching mathematics the use of both conventional and Vedic methods in terms of student performance in mathematics.[3] Krishna Kanta Parajuliet et al. studied historic Sanskrit literature and recreated Vedic mathematics. Their paper's predominant aim is to carry new mathematical methods that offer simple, modest, mental and one-line solutions to mathematical issues. Their article is completely targeted at the unique pattern of Vedic mathematics' basic operations.[4]

In this paper we study an equation of line passing through two points using the vedic mathematics.

We will use *Parāvartya sutra* and *Ādyam, Antyam and Mādhyam* from *Sūtras* of vedic mathematics to solve it.

Parāvartya sutra : *Parāvartya sutra* enable us to find the equation of line in one line simply and mentally.

Parāvartya Rule : Transpose and apply

In solving linear equation:

Consider the system of a linear equation given by

$$a_{11}x_1 + a_{12}x_2 = b_1$$

$$a_{21}x_1 + a_{22}x_2 = b_2$$

Then solution is given by *Parāvartya* Rule :

$$x_1 = \frac{a_{12}b_2 - b_1a_{22}}{a_{12}a_{21} - a_{11}a_{22}}$$

$$x_2 = \frac{b_1a_{21} - a_{11}b_2}{a_{12}a_{21} - a_{11}a_{22}}$$

2.Methodology

Equation to the straight line: To find the equation of straight line passing through two points (x_1, y_1) and (x_2, y_2) :

Example1.

Line passing through $(9,17)$ and $(5,3)$

By Current method:

General equation

$$y = mx + c \quad (1)$$

For $(9,17)$

$$17 = 9m + c \quad (2)$$

For $(3,5)$

$$3 = 5m + c \quad (3)$$

By subtracting equation(2) From equation (3)

$$m = \frac{7}{2}$$

By putting the value of m into equation (2) we get

$$C = \frac{-29}{2}$$

So equation passing through points $(9,17)$ and $(5,3)$ is

$$y = \frac{7}{2}x - \frac{29}{2} \quad (4)$$

$$\Rightarrow 7x - 2y = 29$$

But this method is too long and Cumbersome.

Vedic Method: The vedic at sight, one-line, mental method by the paravartya sutra enable us to write the answer mechanically down by a mere casual look at the given coordinates (x_1, y_1) and (x_2, y_2)

The general equation to the straight line in It's final form

$$ax - by = d$$

Where

$$a = y_1 - y_2 \text{ and } b = x_1 - x_2$$

And to find Value of d or R.H.S. we do this by the help of the rule about Adyam Antyam and Madhyam

$$\text{i.e. } d = y_1x_2 - x_1y_2$$

So equation passing through points $(9,17)$ and $(5,3)$ is

$$(17-3)x - (9-5)y = 17 \times 5 - 9 \times 3$$

$$\Rightarrow 14x - 4y = 58$$

$$\Rightarrow 7x - 2y = 29 \quad (5)$$

Which is exactly same as one obtained by usual method.

Example 2

Equation of line passing through two points (2,3) and (4,5)

By Current method:

General equation is

$$y = mx + c \quad (6)$$

For (2,3)

$$3 = 2m + c \quad (7)$$

$$5 = 4m + c \quad (8)$$

By subtracting equation (7) From equation (8)

$$m = 1$$

By putting the value of m into equation (7) we get

$$c = 1$$

So equation passing through points (2,3) and (4,5) is

$$-x + y = 1 \quad (9)$$

Vedic Method:

The general equation to the straight line in It's final form

$$ax - by = d \quad (10)$$

By the *Parāvartya sutra*

$$a = y_1 - y_2 = -2$$

$$b = x_1 - x_2 = -2$$

By Adyam Antyam and Madhyam

$$d = y_1x_2 - x_1y_2 = 2$$

So final equation is

$$-2x + 2y = 2$$

$$\Rightarrow -x + y = 1$$

Which is exactly same as one obtained by Current method.

3. Conclusion

This paper concludes that Vedic mathematics is very important for an intensive knowledge of mathematics. It includes various Vedas derived from Indian agriculture, and these Vedas assist in performing various types of mathematical operations together with subtraction, addition, division, and multiplication, among others, by means

of presenting the diverse 16 formulae written in Vedas mathematics. This paper provides an overview on the usage of Vedic mathematics in the geometry. Vedic math is a simple kind of mathematics, however it is a extra intelligent technique of doing it. From the above discussion we can easily find the equation of line passing through two points in one line, purely mental and short. So vedic strategies are useful in geometry also as within the mathematical calculations like multiplications, division and square roots and so on It has a bright destiny in advance of it, and it's going to assist students study mathematics more very well with clear explanations. There are a number of researchers who use Vedic mathematics to take a look at and examine mathematical strategies. In competitive exams with little time, students discover it tough to reply aptitude questions fast. So the use of vedic mathematical techniques calculation problems can be solved without difficulty.

References

1. Jagadguru Swami Sri Bharati Krisna Tirthaji Maharaj. 1965 Vedic Mathematics: Sixteen Simple Mathematical Formulae from the veda, Delhi.
2. K.P. Karani, 2017 "An empirical study on role of vedic mathematics in improving the speed of basic mathematical operations", ISSN: 2249-0558. NO. April.
3. Shukla, A. K., Shukla, R. P., & Singh, A. P. 2017. A Comparative Study of Effectiveness of Teaching Mathematics through Conventional & Vedic Mathematics Approach. Educational Quest-An International Journal of Education and Applied Social Sciences, 8(3), 431-436.
4. Parajuli, K. K. 2020. Basic Operations on Vedic Mathematics: A Study on Special Parts. Nepal Journal of Mathematical Sciences, 1, 71-76.