Unleash the Math Magician in You

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Abstract- *Math is one of those subjects that is very crucial to learn. Its concepts are applied in almost every area of life – many problems can frequently be solved through the application of math concepts; thus it is commanding to learn and understand how to solve math problems. Moreover, math problem-solving skills and strategies can help to foster accuracy and inspire confidence. The state of a student's math development as they begin school determines what they must learn and how to achieve mathematical proficiency.*

Vedic Mathematics provides pupil with the "extra something" which helps them to be different. It helps them to play with numbers and thereby removes the phobia of Mathematics. It helps them to be more confident about the subject. Pupil start loving Mathematics once their interest is triggered and confidence level is increased.

- Inculcate love and remove the fear for Mathematics.
- To enhance computation skills in students.
- Improve clarity on mathematical concepts.
- Enable further research in Indian Mathematics.
- It helps in reducing silly mistakes and reduces Phobia of Mathematics.
- It helps in solving problems 10-15 times faster.
- It helps in intelligent guessing.
- It reduces the burden (Need to learn tables only up to 9 only).
- It increases concentration.

Getting a child to take an interest in math is a next-to-impossible task for most children, which I have faced during teaching and as a parent must have experienced at home with my kids. This is where Vedic Math, can help the child get a head start in learning how to solve complex mathematical problems using. As a mathematics teacher, I was in search of a better and less rigid way to teach mathematics to kids in a more meaningful way. Thus, I found Vedic Math. I also felt that Vedic math was the most efficient way to get a kid to use the best of his/her mental faculties to solve even the most complex math problem.

The simplicity of Vedic Mathematics encourages most calculations to be carried out without the use of pen and paper. Once the mind of students develops the understanding for system he/she begins to work closely with numbers and becomes more creative. It is very easy to understand and practice. This process helps student to be confident about the subject mathematics and this removes his/her phobia of mathematics.

What is Vedic Math?

Vedic Math is a system of teaching adopted in ancient India around 1500 B.C to 800 B.C. Under this system, the *Guru* (teacher) would teach students the basics of mathematics through a series of 16 formulae called *Sutras*. These 16 *Sutras* are corollaries and hold the key to learning how to solve mathematical problems in the absence of books. Once a person learns all the 16 *Sutras*, they will become a master mathematician.

Examples of Vedic Math

Multiplication Question : 23 x 21

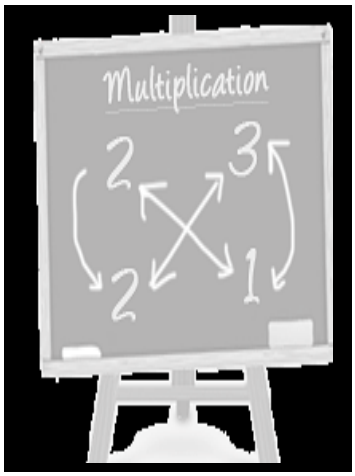
Step 1 : Multiply vertically in the left−hand column 2 x 2 = 4

Step 2 : Then multiply crosswise and add up the sum of the

Two multiplications (2 x 3) + (2 x 1) = 6 + 2 = 8

Step 3 : Lastly, multiply vertically in the right−hand column :

1 x 3 = 3 **therefore,** the **answer is 483**



Magic of 11

Question: 14 x 11

Step 1: We rewrite 14 with space in the middle

Step 2: Then we add the two numbers together (1 + 4) which will give us 5

Step 3: We put the three numbers together to get the **answer of 154**

The question here is then, how do we get children to become motivated enough to learn the 16 *Sutras* so that they can solve complex Mathematical problems? Here is where Vedic Math's can help your child.

How these projects work?

During this work, where mathematics is presented to children through a fun way of learning. Class is packed with group activities that motivate a child to develop an interest in the subject. Children are taught to solve problems through fun-based methods that are also based on the concept of Vedic Math. The child gets so involved in these activities that s/he forgets that this is in fact, a school away from school. With short tricks of Vedic math, child will get the necessary attention according to his/her age and current math skill level.

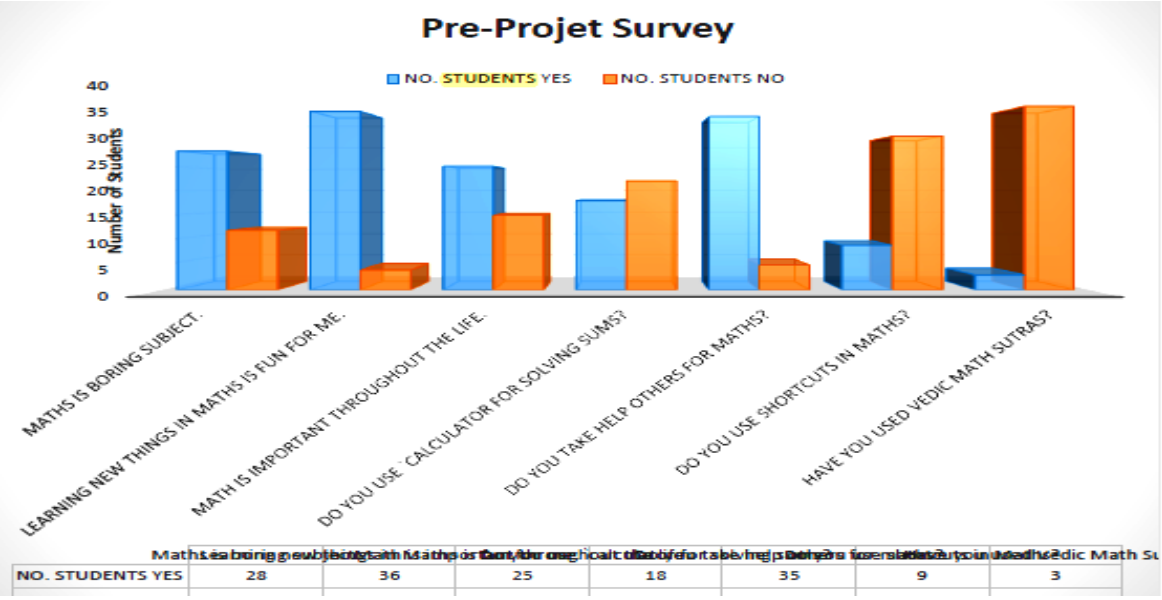
Skills and Knowledge Required

To solve math skills, a student requires the ability to understand shapes, patterns, and have the ability to count. To represent math concepts, kids can use art such as colure blocks rectangles to represent fractions or subtractions that enhance understanding.

Teachers can also use drawing to encourage students, such as for them to draw rectangles to solve math questions that are represented in numbers as whole, fractions, or as a part of a whole to find the answer in the drawing. Additionally, teachers can also use storybooks to teach, since stories and songs use repetition, rhymes, and numbers. At home, a child can invite his or her friends over for a birthday party where they can play number games on a canvas that can greatly improve their math skills.

Execution of the Project

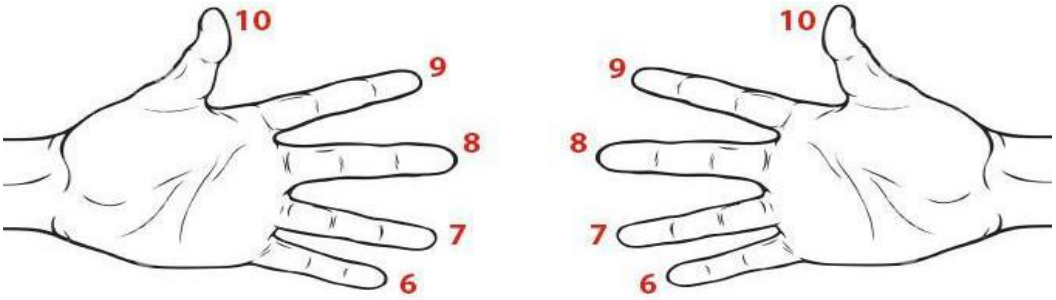
A good understanding of Math's in everyday life is essential for making sense of all the numbers and problems life throws at us. It's almost impossible to get through a day without using Math's in some way, because our world is full of numbers to handle and problems to solve. Studying the Math's in everyday life provides you with the tools to make sense of it all, making life that little bit easier. So, a pre-project survey was conducted among 40 students to find the use of Math's in their day to day life.



The graph shows the interest of students in Math's. So that weekly class was conducted to make familiar with Vedic Math's tricks and the way to solve Math's problems in rapid way. Students liked the method and showed a good response for solving math's sums. Using regular mathematical steps, solving problems sometimes were complex and time consuming. But using Vedic Mathematics' General Techniques numerical calculations have been done very fast. Following are the tricks and tips for doing calculation and find the sums of given number. After giving students time to solve a problem, reveal the correct answer yourself rather than calling on different students to find out if they have the right answer. This step greatly relieves students' anxiety. It takes the focus away from finding the answer, and it sets the stage for a great discussion on how to solve the problem.

Tables of 6, 7, 8 and 9 in Your Hands

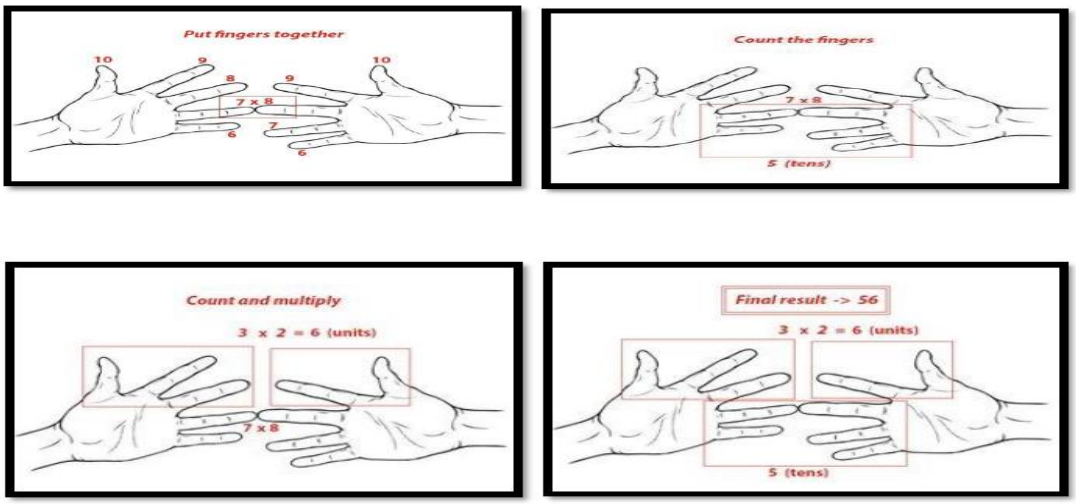
- It was easy to learn the tables from 1 to 5 but from 6 to 9 it seemed to be way Complicated



How to Multiply

☐☐– First put your hands in front of you as shown in the drawing – In each hand, ascribe a

Value from 6 to 10 to each finger



Step 1-Choose the numbers to multiply. ***Example: 7x8***

Step 2 -Put together the fingers whose values you want to multiply.

Step 3 -Now count the touching fingers and the ones below them. The number you get will be the tens. ***Example: 5***

Step 4 -Now multiply the fingers above the ones touching of the left hand and the ones in the right hand. The number you get will be the units. **Example: 3x2=6**

Answer: 56

Example: 7x6 - Touching fingers + the ones below -> 3

Fingers above the ones touching in left hand -> 3 3 x 4 = 12

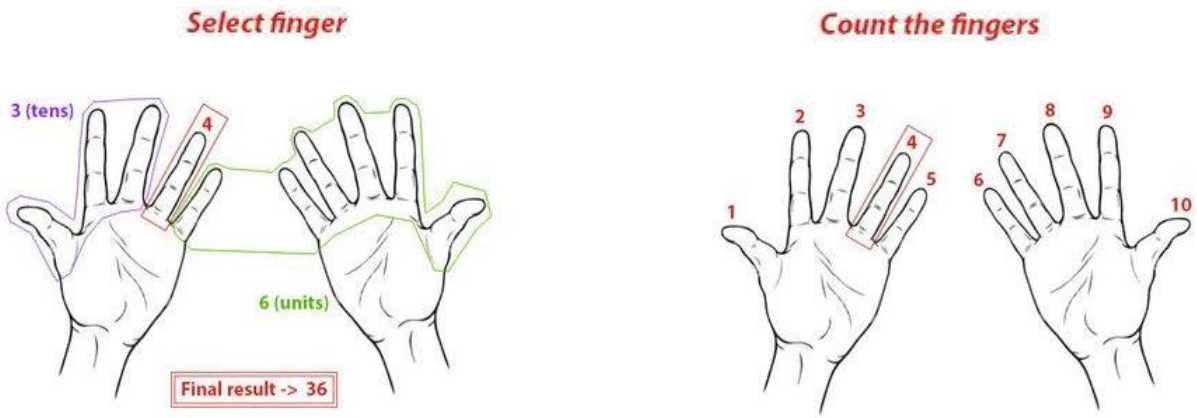
Fingers above the ones touching in the right hand -> 4

3

+12

Now we've got 3 tens and 12 units -> 42 (final result)

Step 3: Another Trick for the Table of 9



- Here's an extra trick for the whole table of nine.
- First put your hands in front of you
- Then ascribe values from 1 to 10 to your fingers
- Fold the finger whose value you want to multiply nine times
- The fingers remaining unfolded in the left will be the tens
- The fingers remaining unfolded in the right will be the units

Example: 9×4

- Fold the fourth finger
- Fingers remaining unfold in the left ->3 (tens)
- Fingers remaining unfold in the right ->6 (units)
- Final result ->36
- Memorize multiplication tables up to 10
- To multiply numbers between 10 and 20 you can either memorize the tables or use this simple trick that helps you multiply in your head
- The trick basically involves adding the unit's digit of one number with the other and multiplying the unit's digit of both the numbers.

Example 1: 12 x 13

- Step 1: Divide the solution into two parts: 12x13 => ? | ?
- Step 2: Left part is obtained by adding either of the numbers with the unit's digit of the other number: 12 + 3 or 13 + 2 => 15. Thus we have 12x13 => 15 |?
- Step 3: Next, right part is obtained by taking the product of unit's digits: 2x3 = 6.
- Thus 12 x 13 = 156

Example 2: 16 x 14

- Calculating the left and right parts as in the previous example, we get 16 x 14 = 20 | 24. But note that the right part cannot contain more that 1 digit. The excess digit if any will be carried to the left part. In this case 2 in 24 will carried to left. Thus **16×14=224**

To multiply any two digit number you can use the vertical and crosswise technique from Vedic Maths to multiply numbers from left to right in your head

Example 3: 24 x 36

- Step 1: Divide the solution into three parts => ? | ? | ?
- Step 2: Left most part is obtained by multiplying the tens digit of both the numbers: 2x3=6. Hence we have 24x36 => 6 | ? | ?
- Step 3: Middle part is obtained by cross multiplying 2 and 6, 3 and 4 and then adding the respective products: 2x6 + 3x4 = 24. Thus 24x36 => 6 | 24 | ? .

Note: Except for the left most part all the other parts cannot contain more than 1 digit.

Hence the excess digit 2 in middle part will be carried over to its immediate left part. Thus 24x36 => 8 | 4 | ?

Step 4: Right most part is obtained by taking the product of units digits : 4x6 =>24. Now, since the number of digits is greater than 1, the excess digit 2 in 24 will be carried to its immediate left part. Thus 24x36 => 864

Square of numbers ending with 5

Formula for calculating square ending with 5 is easy.

Steps

- Multiply 5 by 5 and put composite digit 25 on the right hand side.
- Add 1 to the upper left hand side digit i.e. 8 i.e. 8+1=9
- Multiply 9 to the lower hand digit

8, i.e. 9*8=72 • our answer is 7225.

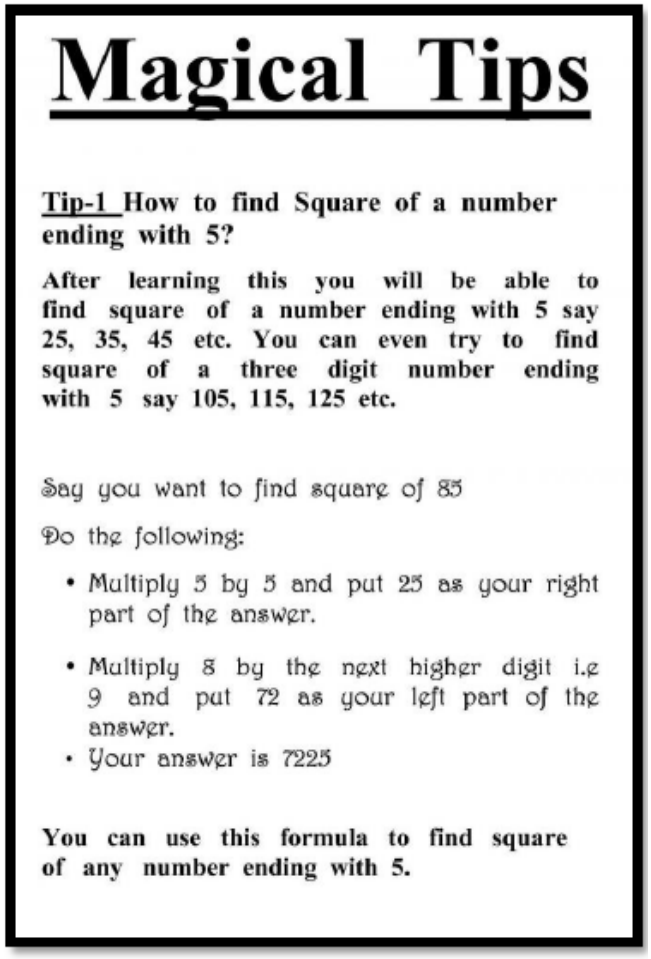
152 = 1 x 2 / 5 x 5 = 2 / 25 = 225

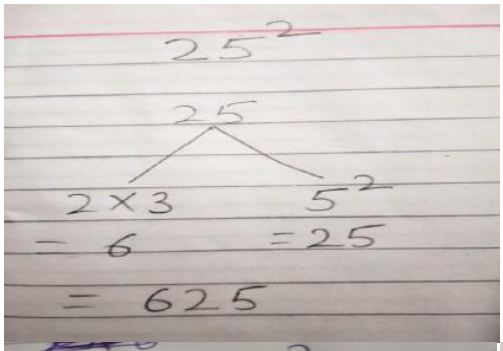
452 = 4 x 5 / 5 x 5 = 20 / 25 = 2025

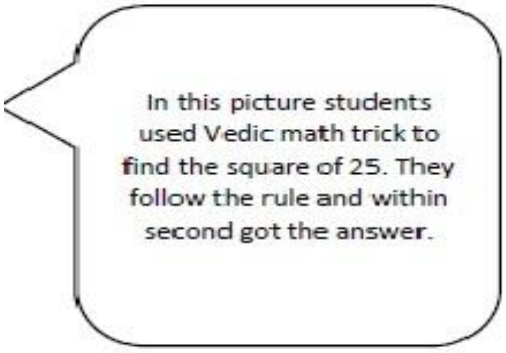
552 = 5 x 6 / 5 x 5 = 30 / 25 = 3025

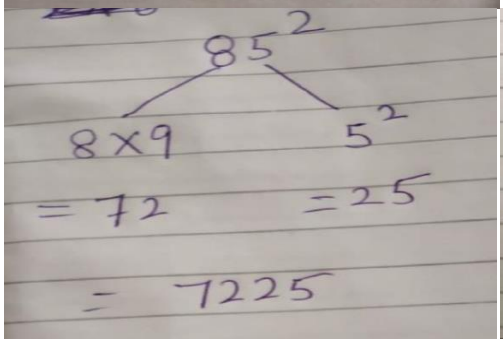
752 = 7 x 8 / 5 x 5 = 56 / 25 = 5625

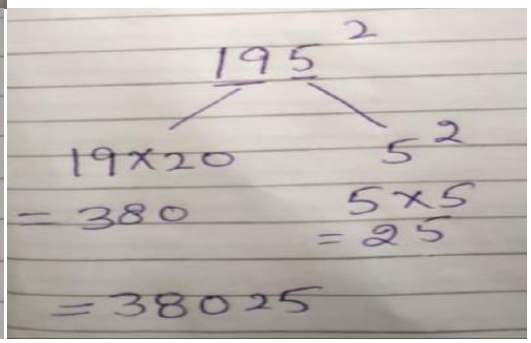
952 = 9 x 10 / 5 x 5 = 90 / 25 = 9025



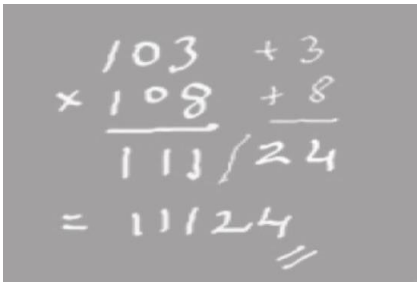


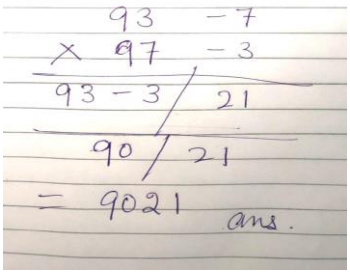


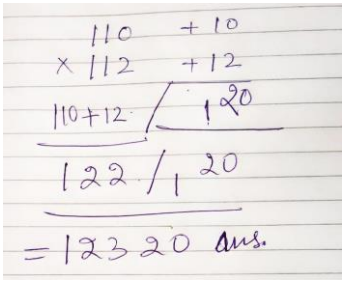




1. Depending upon the numbers closer to power of 10, we select that power of 10 as our Base.
2. Subtract the digits from Base – All the digits from 9 and last from 10. (Write besides those numbers) (See below example 94 * 96). Those numbers if positive will be called as excesses and if negative will be called as deficiencies.
3. Multiply those deficiencies or excesses. (Write in 2nd compartment).
4. Do Cross Addition of Numbers with Deficiencies or excesses. (Write in 1st compartment)
5. 2nd compartment ALWAYS needs to have same number of digits as that of zeroes of the selected Base. If less then pre-append zeroes, If more carry forward initial digits to 1stcompartment.
6. Examples will clear the process.



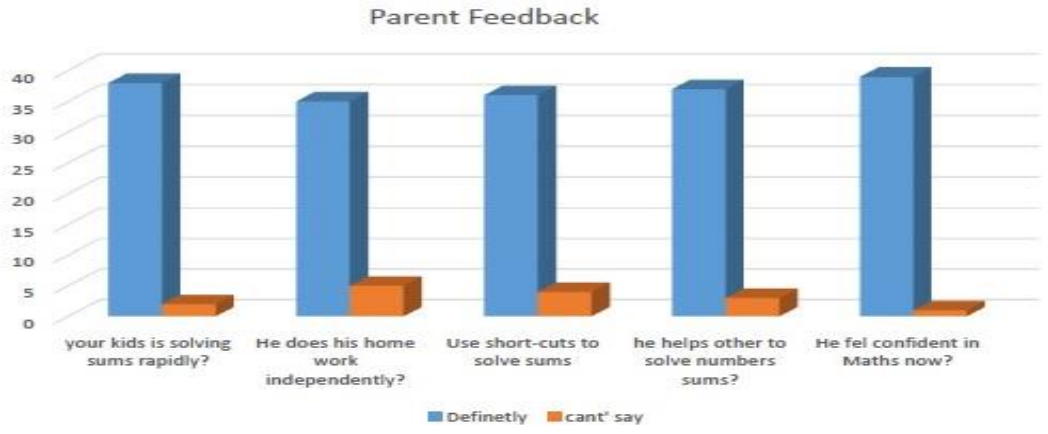




The Use of Vedic Mathematics

More than 200% times faster than normal Math: this makes it the student more confident. So If your child has Math-Phobia Vedic Math is a Fun-Filled way to do Math and arises interest in your child. These are the points that show the success of this project.

- This sharpens the mind, increases mental agility and intelligence.
- Increases speed and accuracy in solving sums. Become them a Mental Calculator.
- It also helps to improve memory and boost self-confidence.
- Students play with number and it cultivates an Interest in students for numbers.
- These are easy to master and apply. They just need the knowledge of tables to learn this.



I suggest that parents avoid talking negatively about math, and especially avoid saying that it is hard or useless instead they should encourage their kids not to give up, and help them find math tricks when they're not able to answer questions. If a child is going to become good at math and pass their math's tests and examinations in school, they must learn all the relevant math models by picking up tips and tricks that enable them to be stronger in their math skills. These tips and tricks help them with math comprehension as well as equip their with problem-solving skills.

Teachers can help children to understand and get better at math by teaching them several math tricks. With such math tricks, they can commit them to memory, empowering them to quickly solve math questions. Once they can remember these math tricks, other math concepts become very easy to work with.

Vedic Math's is a math enrichment concept that focuses on developing kids to be better equipped at math. Vedic math and interactive group sessions help children to learn math and become proficient in the subject. During Vedic Math's classes, children not only learn the "how" of math but also the "why" in math concepts.

References

NCERT textbook Mathematics class-X

National Research Council; *Division of Behavioral and Social Sciences and Education*; Committee on How People Learn.

NCERT textbook Mathematics class-IX

NCERT text book Mathematics class-VIII