VEDIC MATHS

High Speed Multiplication

Content

- Techniques to Try
- Method for Multiplying Two Whole Numbers
- Verifying Your Answer

Vedic Mathematics is a system of mathematical working and reasoning based on the ancient Indian teachings called Veda. It is an ancient technique, which simplifies multiplication, divisibility, complex numbers, squaring, cubing, and square and cube roots. Even recurring decimals and auxiliary fractions can be handled by Vedic mathematics. It is different from conventional mathematical methods in terms of the time it takes. With the help of Vedic mathematics, problems can be solved in less steps, at a much faster rate and even mentally. The basis of Vedic Mathematics, are the 16 Sutras, which attribute a set of qualities to a number or a group of numbers.

Techniques to Try

There are several VM techniques which are easy to learn and will empower you to do some very particular mathematical problems at great speed.

For example, to find the square of a number ending in five:

Squaring 65:

Step 1: Determine the number on the left of 5 (in this case the number is 6).

Step 2: Multiply the number in step 1 with its successive natural number, i.e. 6*(6+1) = 6*7.

Step 3: Write (5*5 = 25) at the end of the number obtained in step 2.

So, the answer in this case is 4,225.

On a similar basis, try squaring other numbers like 25, 35, 75, 85, 105 (in the case of 105, the number at the left of 5 is 10. Now multiply 10 with (10+1) and the final result is 11,025).

The above method can be generalized for multiplication of any two digit numbers which satisfy these two conditions:

- the same digit at the tens place, and
- the digits at units place add to 10.

For example,

Multiply 43 and 47:

Step 1: Determine the number at the tens place and multiply it with the next consecutive natural number in the number series. In this case, 4*(4+1) = 4*5 = 20.

Step 2: Multiply the numbers at the units place (the numbers whose sum is 10), here 3 and 7.

Step 3: The numbers in step 1 and step 2 writing adjacently is your answer, 2,021.

Try multiplying 52 and 58, 91 and 99, 106 and 104 as an exercise.

The main advantage of these techniques is you don't need to use pen and paper. After practicing for a while, you can do them mentally. To spice up things, challenge your friends to mentally multiply, say 103 and 107, or square 95, and see who does it in the least amount of time. We will learn more such methods which though being specific, allow you to solve a wide range of algebraic problems in a blink.

Now let us see a very general method to multiply any two whole numbers. The method might require you to use pen and paper, but the number of operations involved and time is hugely reduced and hence the chances of error are also diminished.

Method for Multiplying Two Whole Numbers

Let us study this method with an example: 63*48

We will be doing multiplication with the vertical and crosswise method.

The method is schematically represented above,

Step 1: Write the numbers one below another and multiply the digits at units place.

63

48

-————

Here, 3*8 = 24. So the units place of the answer has 4, and 2 is the carry forward.

Step 2: Now, cross-multiply the digits as shown in the diagram, and add the two numbers obtained after multiplication,

6*8 = 48 and 4*3 = 12

48 + 12 = 60

Step 3: The number obtained is 60. Adding the carry forward from step 1, we get, 60 + 2 = 62.

Hence, the number at tens place of the answer is 2, and 6 is the carry forward for the next step.

Step 4: Now multiply the digits at the tens place and add the carry forward from step 3 to it.

6*4 = 24

24+6 = 30

So, our final answer is 3,024.

The method might seem tedious, but in reality all you had to write down were the two numbers one below the other, and your final answer. In the first step, the multiplication of two single digits can be done mentally, and 4 can be directly written in the unit's place of the answer. The carry forward might be written as a subscript, so that it is not forgotten. Even in the second step multiplication and addition should come in your mental work and only the final tens place digit, 6, needs to be written down. The last step is similar to the first one, except for the addition of carry.

Do not be disheartened with the length of this method. It is only a matter of time before you get acquainted with it. Practice the method on more than two or less than two digit numbers, like 13*47, 76*8 (in this case, write the two numbers as 76 and 08, one below the other). Once you have mastered the method, you will find how fast and easily you can now do the multiplication, and then you won't even need to write down anything on the paper. Try it!

This method can be generalized for multiplication of any two numbers. At the end of this page is the schematic diagram for up to 4×4 Vedic multiplications.

Do not forget to practice the above methods or else they won't be of any use. You need to incorporate these methods in your daily calculations, so that you can master them and make yourself faster and more efficient at math.

Verifying Your Answer

No one is immune from errors, and quick ways of checking long computations are always useful. Below, I'm mentioning a method to verify your answer, so that the chance of error is minimized.

Suppose you have to verify that 8,216*4,215 = 34,630,440.

Step 1: Add up the digits of each factor (the numbers you want to multiply) and of the product.

Step 2: Divide each of the sum of digits by 9, and write down the remainder in each case – the remainder is called the check number.

Step 3: Now multiply the check numbers of multiplicand and multiplier. Add the digits of this product. The sum should be same as the check number of the product of your original multiplication, i.e. of 34,630,440.

8 + 2 + 1+ 6 = 17, check number is 8 (17/9 gives remainder to be 8).

4 + 2 + 1 + 5 = 12, check number is 3.

Now, 8*3 = 24. The sum of digits of this product is 2 + 4 = 6.

Now, verifying whether this is equal to the check number of the product.

Check number of the product is,

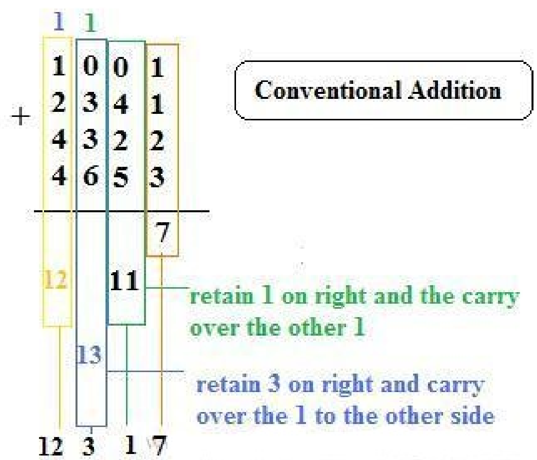
3 + 4 + 6 + 3 + 0 +4 + 4 + 0 =24, check number is 6.

Thus, the answer 34,630,440 is correct.

Accelerated Addition

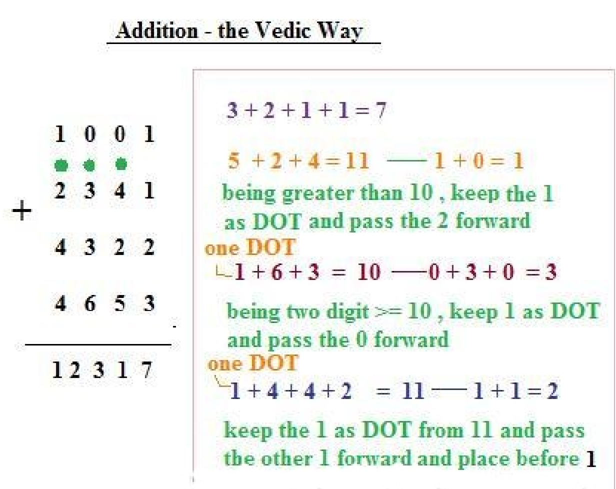
These basic Math operation is part of our daily life and interestingly we can add numbers in a different method other than our conventional method

Conventional Method



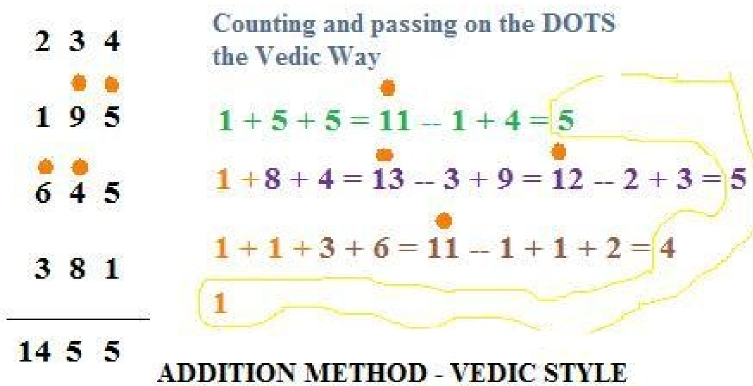
The above method is the usual method we learn at school i.e; adding each column from right to left and carrying the extra's to the next column to get our final answer.(DOWNLOAD FREE BOOK NOW)

Addition in Maths using DOTS



From the above , we see that the 1’s on the left side of the two-digit number are replaced as DOTS and then counted back for the addition operation for the next column

<u>Another Example :</u>



Instant Subtractions

Subtraction Tricks! Get better at calculations

Subtraction is the opposite of the addition process. By going through the following examples, substitution can be learnt.(EXPLORE MORE IN APP)

Subtraction is made easy and simple mathematical operation by Vedic mathematics.

1. Subtracting 1

10 – 1 =9

100 – 1 = 99

When subtracting 1 from zero, the answer contains only 9s.

2. Subtraction from power of 10

In this technique, we take the nearest power of 10 for the numbers involved and subtract the numbers from the base.

Another rule called Nikhilam rule helps us. Nikhilam is one of the 16 main Sutras of Vedic mathematics.

Nikhilam rule says, “All from 9 and the last from 10”.

Example

10000-8675

99910 – 8675 =1325 Answer.

In this, we subtract each digit of the number simply from 9 for all digits except for the last digit, which is subtracted from 10.

If the number has a smaller number of digits, add leading zeros to have more digits.

Example

100000-875 = 999910-00875
= 999910 – 00875
= 99125 Answer.

Example

- Subtrahend is less than minuend.

3625 – 1789

Subtract the subtrahend from the highest next power of 10 by Nikhilam rule.

99910 – 1789 = 8211

Add the result to the minuend, i.e., 3625 + 8211 = 11836.

Deleting the first digit, 1, the answer is 1836.

- 4529 – 2380

In this, 2380, the last digit from the left is zero. Here '8' is to be subtracted from 10, keeping the zero as the last digit from left.

Then,

99100 – 23 80 = 7620 + 4529
= 12149

Deleting the left first digit, the answer is 2149.

- 45827 – 398 (subtrahend is of less digits than minuend)

i.e., 45827 – 00398

i.e., 999910 – 00398 = 99602 ———(1)

Add (1) with 45827

99602 + 45827 = 145429

Deleting 1, the answer is 45429.

- Minuend less than subtrahend

351 – 497

Apply NIKHILAM rule to Minuend

9910 – 351 = 649

Add subtrahend

649 + 497 = 1146

Deleting 1, first digit at left, the answer is -146.

Digital Roots

This question in the Intermediate category is also one of those "frequently missed" in the recent 1st MATH-Inic Vedic Mathematics National Challenge. Variations of this question were also given in the younger categories and the same low percentage (25 to 30%) of correct responses were recorded.

We suspect that most contestants either do not know what a digital root is or they do not know how the Vedic Math sutra, "The Product of the Sums is the Sum of the Product" or PSSP is applied.

The digital root or the repeated digital sum of a number is obtained by adding the digits of a number. If the result has more than 1 digit, we add the digits again until a single digit remains.(EXPLORE MORE IN APP)

We can use the technique of casting out 9s in order to shorten the determination of the digital root.

In the question given "what is the digital root of the product of 98,989 and 43,934?", we can easily cast out the three 9s in 98,989 leaving us with two 8s. Then we can "transfer" 1 from an 8 and add it to the other 8 to get 7 and a 9: 8 + 8 = (7 + 1) + 8 = 7 + 9. The we again cast out the 9 to get a digital root of 7.

For 43,934, we can immediately cancel the 9. The we have two 3s so we need another 3 to complete a 9. We can get if from one of the 4s: 4 + 3 + 3 + 4 = 4 + 3 + 3 + (3 + 1) = 4 + 9 + 1. So if we cast out the 9, we are left with 4 + 1 or 5.

Now we do not have to multiply the two 5 digit numbers before getting the digital root of their product. We just have to use PSSP: the product of the digit sums of the numbers is equal to the digit sum of their Product.

We just have to multiply their digit sums 7 x 5 to get 35 then add 3 + 5 = 8.

We can also modify the question into "what is the remainder when the product of 98,989 and 43, 934 is divided by 9?" and the answer is still 8.

Algebra: Linear, Simultaneous, Quadratic and Miscellaneous Equations

Squares

Tirthaji Maharaj has mentioned tricks to Square Numbers in Vedic Mathematics in Specific and General Methods. Specific Multiplication Methods can be applied when numbers satisfy certain conditions like number ending with 5 or number closer to power of 10, etc. While General Multiplication Methods can be applied to any type of number.

Depending on Specific and General Techniques, Squares in Vedic Mathematics are classified in the form of Sutras as below. Lets see the Vedic Mathematics Squares shortcut techniques.

Calculating Vedic Math Square Tricks can be classified in following types:

1. Yavadunam (Specific Method)
2. Ekadhikena Purvena (Specific Method)
3. DvandaYoga (General Method)

Yavadunam:

It is a specific and shorcut to square numbers using Vedic Mathematics whenever number is closer to power of 10. (10, 100, 1000, ….)

Lets see examples for vedic maths square method of Yavadunam:

Square of 14:

$14^2 = (14+4)/4^2 = 18/16 = 196$

Here 14 is 4 more than 10(Base 10), So **Excess = 4**
Increase it still further to that extent, So (14+4) = 18
Square its excessive, So 4^2= 16
Final Answer:� 196

Square of 97:

$97^2 = (97-3)/3^2 = 94/09 = 9409$

Here 97 is 3 less than 100(Base 100), So **deficiency =3**
Reduce it still further to that extent, So (97-3) = 94.(DOWNLOAD FREE BOOK NOW)
Square its deficiency, So 3^2 = 09. (As base is 100, we need exactly 2 digits. Hence 09).
Final Answer:� **9409**

Ekadhikena Purvena:

This is another specific� vedic maths tricks for square of a number ending with 5.

Lets see examples for vedic squares tricks using Ekadhikena Purvena.

4. Check if last digit is 5, if yes – square of 5 is 25
5. Apply Ekadhikena Purvena for rest of the number i.e. Add 1 to the previous number and multiply each other. Example in case of square of 85, Add 1 to 8 to get 9 and multiply this with 8.
6. Steps 1 and 2 together gives final answer.

DvandaYoga (Duplex Method):

Dvanda Yoga is general method to square any number in vedic maths. Dvanda Yoga or Duplex Method is shortcut method for squares of large numbers.

How to calculate Dvanda

Concept:

$D(3) = 3^2 = 9$
$D(43) = 2x4x3 = 24$
$D(567) = 2x5x7 + 6^2 = 70 + 36 = 106$

D(3456) = 2x3x6 + 2x4x5 = 36 + 40 = 76
D(34567) = 2x3x7 + 2x4x6 + 5^2 = 42 + 48 + 25 = 115

Cubes

Today, we are taking a next level of topic i.e. finding the cube root. With normal approach, finding cube root is bit complex. However, using Vedic Math techniques, it becomes interesting and fast too. This amazing technique will help you to find out the cube root of a 4 or 5 or 6 digits number quickly and all using mind power only. Technique specified in this article will work for perfect cubes only, not for other numbers (that we shall discuss in forthcoming articles). Lets start learning.

We know that, cube of a 2-digit number will have at max 6 digits (99^3 = 970,299). This implies that if you are given with a 6 digit number, its cube root will have 2 digits. Further, **following are the points to remember for speedy calculation of cube roots (of perfect cubes).**

7. The lowest cubes (i.e. the cubes of the fist nine natural numbers) are 1, 8, 27, 64, 125, 216, 343, 512 and 729.
8. They all have their own distinct endings; with no possibility of over-lapping (as in the case of squares).
9. The last digit of the cube root of an exact cube is obvious:
    - 1^3 = 1 > If the last digit of the perfect cube = 1, the last digit of the cube root = 1
    - 2^3 = 8 > If the last digit of the perfect cube = 8, the last digit of the cube root = 2
    - 3^3 = 27 > If the last digit of the perfect cube = 7, the last digit of the cube root = 3
    - 4^3 = 64 > If the last digit of the perfect cube = 4, the last digit of the cube root = 4
    - 5^3 = 125 > If the last digit of the perfect cube = 5, the last digit of the cube root = 5
    - 6^3 = 216 > If the last digit of the perfect cube = 6, the last digit of the cube root = 6
    - 7^3 = 343 > If the last digit of the perfect cube = 3, the last digit of the cube root = 7
    - 8^3 = 512 > If the last digit of the perfect cube = 2, the last digit of the cube root = 8
    - 9^3 = 729 > If the last digit of the perfect cube = 9, the last digit of the cube root = 9
10. In other words,
    - 1, 4, 5, 6, 9 and 0 repeat themselves as last digit of cube.
    - Cube of 2, 3, 7 and 8 have complements from 10 (e.g. 10's complement of 3 is 7 i.e. 3+7=10) as last digit.(EXPLORE MORE IN APP)
11. Also consider, that
    - 8's cube ends with 2 and 2's cube ends with 8
    - 7's cube ends with 3 and 3's cube ends with 7

If we observe the properties of numbers, Mathematics becomes very interesting subject and fun to learn. Following same, let's now see how we can actually find the cube roots of perfect cubes very fast.

Example 1: Find Cube Root of 13824

Step 1:
Identify the last three digits and make groups of three digits from right side. That is 13824 can be written as
13 , 824

Step 2:
Take the last group which is 824. The last digit of 824 is 4.
Remember point 3, If the last digit of the perfect cube = 4, the last digit of the cube root = 4
Hence the right most digit of the cube root = 4

Step 3:
Take the next group which is 13.
From point 3, we see that 13 lies between 8 and 27 which are cubes of 2 and 3 respectively. So we will take the cube root of the smaller number i.e. 8 which is 2.
So 2 is the tens digit of the answer.

We are done and **the answer is '24'**

Isn't that easy and fun..

Example 2: Find Cube Root of 185193

Step 1:
185193 can be written as
185 , 193

Step 2:
Take the last group which is 193. The last digit of 193 is 3.
Remember point 3, If the last digit of the perfect cube = 3, the last digit of the cube root = 7
Hence the right most digit of the cube root = 7

Step 3:
Take the next group which is 185.
From point 3, we see that 185 lies between 125 and 216 which are cubes of 5 and 6 respectively. So we will take the cube root of the smaller number i.e. 125 which is 5.
So 5 is the tens digit of the answer.

So, **the answer = 57.**

Try some of the perfect cubes like 287496, 658503, 46656.

Isn't that interesting and easy technique! Try some examples, enjoy this interesting technique. We shall discuss how to calculate cube root of other numbers in coming articles.[(DOWNLOAD FREE BOOK NOW)]

Square Roots

Earlier we discussed "Squaring numbers near base" and "General Squaring through Duplex Process" and now we will find out how to calculate the square root of numbers. To understand this, let us first learn basic rules for finding the square root.

(1). The given number is first arranged in two-digit groups from right to left. If on left hand side, a single digit is left, that will also be counted as a group.
(2). The number of digits in the square root will be the same as the number of groups derived from the number. Examples are:

- 25 will be having one group as '25', hence square root should be of one digit.

- 144 will be having two groups as ’44’ and ‘1’, hence the square root should be of two digits.
- 1024 will be having two groups as ’24’ and ’10’, hence the square root should be of two digits.

(3). If the given number has ‘n’ digits then the square root will have n/2 or (n+1)/2 digits
(4). The squares of the first nine natural numbers are 1,4,9,16,25,36,49,64, and 81. All of these squares end with 1, 4, 5, 6, 9, 0. This means

- An exact square never ends in 2, 3, 7 or 8
- If a number ends in 2, 3, 7 or 8, its square root will always be an irrational number
- If an exact square ends in 1, its square root ends in 1 or 9
- If an exact square ends in 4, its square root ends in 2 or 8
- If an exact square ends in 5, its square root ends in 5
- If an exact square ends in 6, its square root ends in 4 or 6
- If an exact square ends in 9, its square root ends in 3 or 7

(5). If a perfect square is an odd number, the square root is also an odd number
(6). If a perfect square is an even number, the square root is also an even number
(7). A whole number, which ends with an odd numbers of 0’s, can never be the square of a whole number
(8). An exact square never ends in a 6 if the penultimate digit(digit that is next to the last digit) is even (eg. exact squares can not end in 26, 46, 86, etc.)
(9).An exact square never has an odd penultimate digit unless the final digit is a 6 (thus, exact squares can not end in 39,71, etc.)
(10).An exact square never ends with an even number when the last two digits taken together are not divisible by 4 (thus, no exact square can end in 22, 34 and other non-multiples of 4 if the last digit is even)(EXPLORE MORE IN APP)

Firstly, we use “***The First by the First and the Last by the Last***” technique to solve the square root.

(1). √6889
There are two groups of figures, ’68’ and ’89’. So we expect 2-digit answer.
Now see since 68 is greater than 64(8^2) and less than 81(9^2), the first figure must be 8.

So, 6889 is between 6400 and 8100, that means, between 80^2 and 90^2.
Now look at the last figure of 6889, which is 9.
Squaring of numbers 3 and 7 ends with 9.
So, either the answer is 83 or 87.
There are two easy ways of deciding. One is to use the digit sums.
If 87^2 = 6889
Then converting to digit sums
(L.H.S. is 8+7 = 15 -> 1+5 -> 6 and R.H.S. is 6+8+8+9 -> 31 -> 3+1 -> 4)
We get 6^2 -> 4, which is not correct.
But 83^2 = 6889 becomes 2^2 -> 4, so the answer must be 83.
The other method is to recall that since 85^2 = 7225 and 6889 is below this. 6889 must be below 85. So it must be 83.

Note: ***To find the square root of a perfect 4-digit square number we find the first figure by looking at the first figures and we find two possible last figures by looking at the last figure. We then decide which is correct either by considering the digit sums or by considering the square of their mean.***

(2). √5776

The first 2-digit(i.e. 57) at the beginning is between 49 and 64, so the first figure must be 7.

The last digit (i.e. 6) at the end tells us the square root ends in 4 or 6.

So the answer is 74 or 76.

74^2 = 5776 becomes 2^2 -> 7 which is not true in terms of digit sums, so 74 is not the answer.

76^2 = 5776 becomes 4^2 > 16 -> 7, which is true, so 76 is the answer.

Alternatively to choose between 74 and 76 we note that 75^2 = 5625 and 5776 is greater than this so the square root must be greater than 75. So it must be 76.

Cube Roots

Cube-Roots

Facts:

12. Cubes from 1- 10

Number	**Cube**	**Cube ends with**	Thus as seen cubes have distinct ending, there is no overlapping. Thus, if the given number is perfect cube, then the last digit will help to find the cube root.
1	1	**1**	
2	8	**8** (Compliment of 2)	
3	27	**7** (Compliment of 3)	
4	64	**4**	
5	125	**5**	
6	216	**6**	
7	343	**3** (Compliment of 7)	
8	512	**2** (Compliment of 8)	
9	729	**9**	
10	1000	**0**	

-
  A. Cube roots need be grouped in a group of 3 from R –> L.Thus the number of groups formed will be == Number of digits in the cube root.For example (for perfect cubes).
  B. 1728 will be grouped as **1,728**. Thus its cube root will be of **2** digits84604519 will be grouped as **84,604,519**. Thus its cube root will be of **3** digits.300763 will be grouped as **300,763.** Thus its cube root will be of **2** digits.(DOWNLOAD FREE BOOK NOW)
  C. Always the 1st group will decide the 1st digit of cube root.Find the perfect cube which is <= 1st group and its cube root will be 1st digit of given number's cube root.

For above examples

Cube	**Perfect cube <= 1st group**	**Cube root of column 2**	**1st digit of given num's cube root.** (3rd point)	**Last digit of given num's cube root.**	**Number of digits in given num's cube root** (2nd point)	**Required cube root**
1,728	1	1	1	2	2	12

84,604,519	64	4	4	9	3	4_9
300,763	216	6	6	7	2	67

13. As seen from above table, when we have 2 groups we can directly write the cube root(2 digits) i.e. Calculating cube root of a number having <=6 digits is very simple and doesn't require more steps. But if we have more than 2 groups we need to use some other logic.
14. 3 digit number(cba) can be written as a+10b+100c. Its cube:$(a+10b+100c)^3= a^3 + 1000b^3 + 10,00,000c^3 + 30a^2b + 300a^2c + 300ab^2 + 30,000ac^2 + 3,00,000bc^2 + 30,000b^2c + 6000abc.= 10,00,000c^3 + 1,00,000 \times 3bc^2 + 10,000 \times (3ac^2+ 3b^2c) + 1000 \times (b^3+6abc) + 100 \times (3a^2c + 3ab^2) + 10 \times 3a^2b + a^3$.

Places	Ten lakh/ 1 million	lakhs	Ten Thousands	Thousands	Hundreds	Tens	Unit
	c^3	$3bc^2$	$3ac^2+ 3b^2c$	b^3+6abc	$3a^2c + 3ab^2$	$3a^2b$	a^3

Argumentation Method (Vedic Math Cube Root for a 3 digit number):

It is a method of eliminating process of reasoning methodical.

15. From unit's place, subtract a^3 and this will eliminate last digit.
16. From ten's place, subtract $3a^2b$ and this will eliminate 2nd last digit.
17. From hundreds place, subtract $(3a^2c + 3ab^2)$ and this will eliminate 3nd last digit.
18. From Thousands place, subtract (b^3+6abc) and this will eliminate 4th last digit and so on.

Math Meditation - Doing Math Calculations without Pens and Paper!

Divisibility

Like Multiplication, Tirthaji Maharaj has classified tricks to Divide Numbers in Vedic Mathematics in Specific and General Methods. Specific Division Methods can be applied when numbers satisfy certain conditions like Divisor slightly less than 100 or Divisor slightly greater than power of 10 or Divisor is ending with 9, etc. While General Multiplication Methods can be applied to any types of numbers.

Depending of Divisor and Dividend, Division in Vedic Mathematics are classified in the form of Sutras as below. Lets see the Vedic Mathematics Division techniques:

19. Nikhilam Sutra (Specific Technique)
20. Paravartya Sutra (Specific Technique)
21. Anurupyena Sutra (Specific Technique)
22. Direct Flag Method (General Technique)
23. Ekadhikena Purvena (Specific Technique)
24. Vestanas (General Technique)

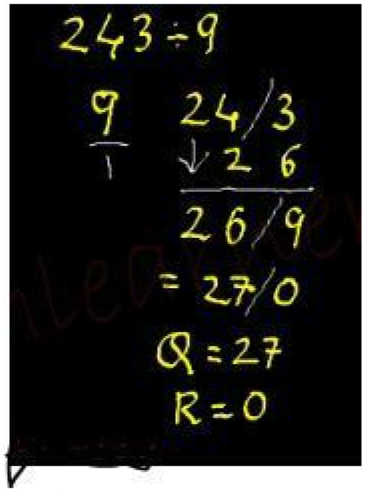
Nikhilam Sutra:

Nihilam Sutra is a Specific Method to Divide Numbers using Vedic Mathematics. This Vedic Maths Division Method can be applied when Divisor is closer to power of 10 BUT less than that of it.

Using Nikhilam Sutra, you can easily divide when divisor is like 98, 92, 995, 89997, etc.

Lets see division math tricks using Nikhilam Sutra. Example: 243/9

Process:�



25. 9 is 1(deficiency) less than 10(nearest power of 10). (that 1 is written in white color below divisor in example)(EXPLORE MORE IN APP)
26. Split Dividend in 2 parts (Quotient & Remainder) in such a way Remainder to have same number of digits as that of Divisor. In this case its 1 digit.
27. Take 1st digit – 2 down as it is.
28. Multiply the above deficiency (1) with the 2 and put below 4 and add them column wise to get 6.
29. Multiply deficiency (1) by 6 and put below 3 and add column wise to get 9.
30. As last column is filled, we stop the process.
31. We know the concept that Remainder can NEVER be >= Divisor,� as Remainder 9 is = our Divisor 9, we divide 9 by 9 to get Quotient 1 and Remainder as 0.
32. Add the Quotient 1 to original Quotient 26 to get 27.
33. Thus Quotient=27 & Remainder=0.

Click Here => To Check More Examples on Vedic Maths Tricks for Division using Nikhilam Sutra.

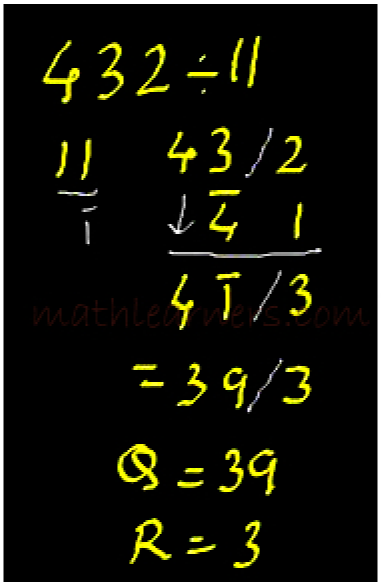
Paravartya Sutra:

This is another Shortcut Method of Division in Vedic Mathematics.�

Paravartya Sutra is a Specific Method for division in Vedic Maths. This Vedic Maths Division Method can be applied when Divisor is closer to power of 10 BUT greater than that of it.

Using Paravartya Sutra, you can easily divide when divisor is like 123, 104, 1112, etc.

Lets see division math tricks using Nikhilam Sutra. Example: 432/11(DOWNLOAD FREE BOOK NOW)



 # 432/11

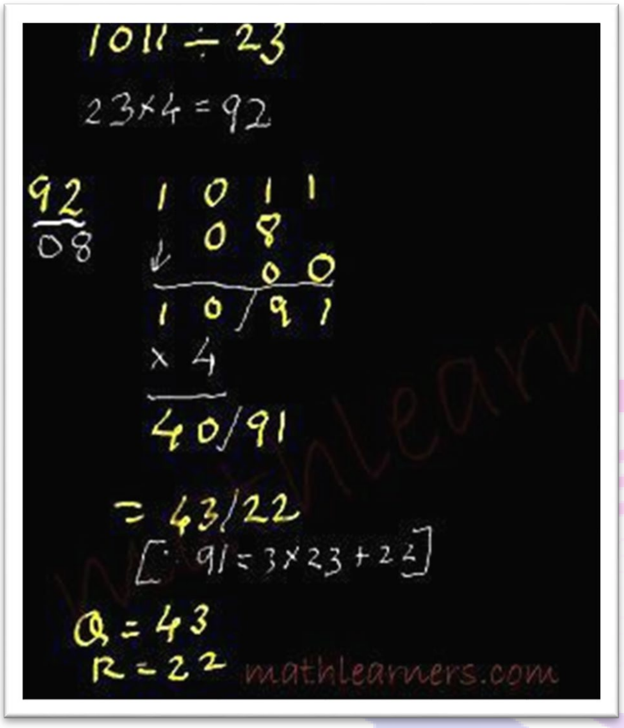
- Discard the 1st digit(1) of Divisor(11) and take Transpose of remaining digits(i.e. -1 or Bar 1).
- Split Dividend in 2 parts (Quotient & Remainder) in such a way that Remainder part should have same number of digits thus obtained in 1st step.Thus remainder part will have only 1 digit
- Now carry the same process as done with previous (Nikhilam) method.
- If any bar digit is present in final answer, convert to Normal method using Vinculum.

Click Here => To check more examples of vedic division tricks using Paravartya Sutra.

Anurupyena Sutra

Anurupyena Sutra is another Specific Vedic Maths Division Tricks which shows how to divide numbers when Nikhilam and Paravartya are not applicable.

Using Anurupyena Sutra, we multiply Divisor by a factor so that either Nikhilam or Paravartya Sutra can be applied.



Example:� 1011/23

- Divisor is 23. Multiply by factor(4) to get 92 so that Nikhilam Sutra of Division can be applied.
- As per Nikhilam Sutra, 92 is 8 less than 100 (base). Hence write 08 under 92 (Base is 100 so we need 2 digits)
- Apply Nikhilam Sutra as discussed previously.(EXPLORE MORE IN APP)
- As per Anurupyena Sutra, multiply the Quotient by the factor used earlier i.e.4.
- As we know the concept that Remainder can NEVER be >= Divisor,� as Remainder 91 is greater than our Divisor 23, we divide 91 by 23 to get Quotient 3 and Remainder as 22.
- Add this Quotient 3 to original Quotient 40 to 43 as new Quotient.
- Thus Final Answer, Quotient = 43 and Remainder = 22.

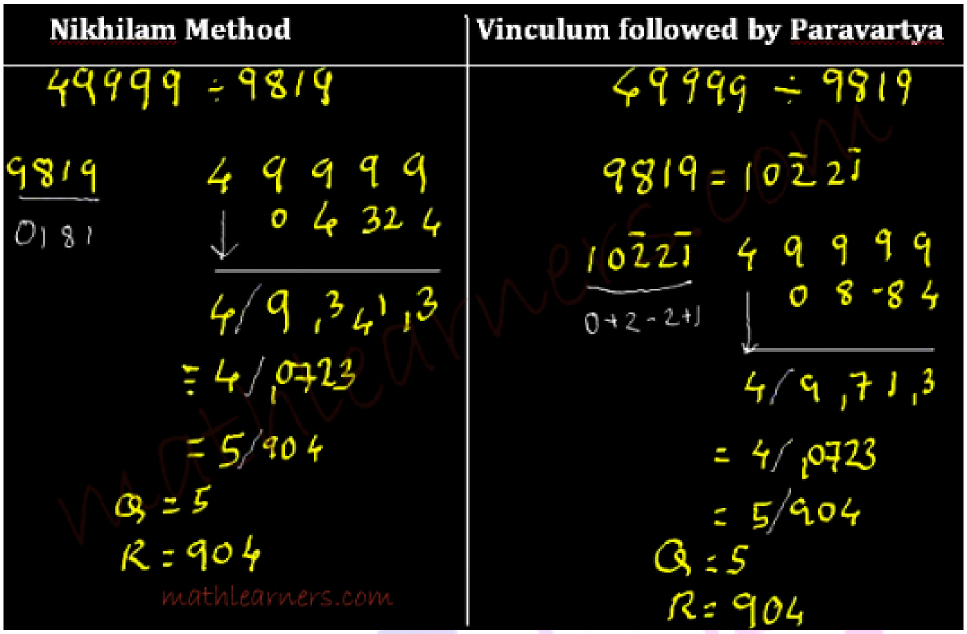
Click here => Check Process and More Examples Vedic Maths Tricks of Anurupyena Sutra.

Vinculum Process of Division

Vinculum is another division in vedic maths tricks which can be applied when Divisor has digits greater than 5.

Using Vinculum Process, convert those bigger digits to smaller digit and then apply Nikhilam Sutra or Paravartya Sutras of Division.

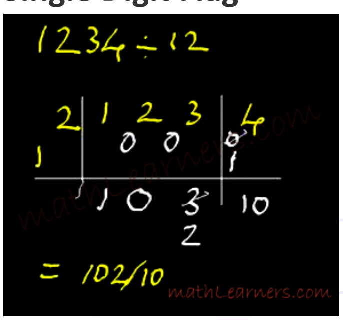
Example:



Direct Flag Division:

Direct Division (Flag Method) is a general method of Division in Vedic Mathematics shows shortcut to divide any types of numbers. It is a shortcut method for division of large numbers.(EXPLORE MORE IN APP)

Single Digit Flag



1234/12 –� Dividend = 1234 and Divisor = 12. Split divisor (12) in 2 parts (1 and 2) where division will be carried using ONLY 1(new divisor) and 2 is called as flag. As flag is single digit, Split dividend in 2 parts such that 2nd part will have same number as that of flag i.e. 1 digit.

Process (see the example for each step):

34. Division of 1 by 1 (Q=1 and R= 0). Write Q=1 and carry forward the R=0(written in white under and between 1&2).
35. Multiply the new Q(1) with the flag(2) and subtract this product from 02 = 0 and divide this subtraction by 1. It gives Q= 0 and R= 0(Carry forward R=0). (i.e. *Multiply, Subtract, Divide*)
36. Follow same above process, So multiply new Q(0) with flag(2) and subtract this product from 03 = 3 and divide this subtraction by 1. It gives Q= 3 and R= 0(Carry forward R=0).
37. **For remainder** we carry same process **EXCEPT** we don't divide. (i.e. *Multiply, Subtract*) So multiply new Q(3) with flag(2) and subtract this product from 04 = -2. As we get negative

subtraction, we reduce the quotient by 1 and increase the remainder by the 1st multiplier of new multiplier (1X1 =1). So new Q = 2 and new R =1. (Refer Topic Work with Quotient and Remainder). We carry this method till we don't have negative subtraction.

38. Now Multiply the new Q(2) with the flag(2) and subtract this product from 14 = 10(positive) and put it down as it is.(DOWNLOAD FREE BOOK NOW)
39. So final answer: **Quotient = 102 and Remainder = 10** (Remainder should always < Divisor| (Refer Topic Work with Quotient and Remainder).

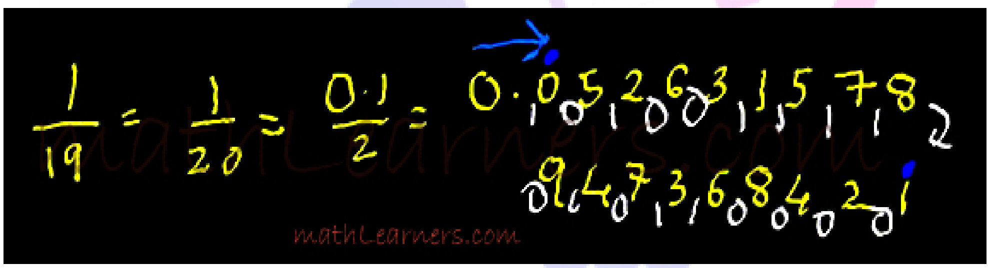
Click Here => Check the process and more examples of Direct Flag Method of Vedic Maths.

Ekadhikena Purvena

It is another shortcut method of division in Vedic Maths when Divisor is ending with 9.

Example 1/19:

For the denominator 19, the purva (previous) is 1.
Hence Ekadhikena purva (one more than the previous) is 1 + 1 = 2.
Now, As per Ekadhikena Purvena, we will be using 2 for Division purpose.



Steps:

- Divide 1 by 2 which gives Quotient as 0(written with yellow) and Remainder as 1 (written on left side of Quotient with White)
- Now divide 10 by 2 which gives Quotient as 5(written with yellow) and Remainder as 0 (written on left side of Quotient with White)
- Now divide 05 by 2 which gives Quotient as 2(written with yellow) and Remainder as 1 (written on left side of Quotient with White)
- Similarly go on carrying this process till you find same pair of Quotient and Remainder is obtained.
- At the end we get 01, on dividing it by 2 we get Quotient as 0 and Remainder as 1. So that means same series (from blue dot to blue dot) will keep on repeating.
- So the series written in yellow color is final answer.

Ekadhikena Purvena can be applied to divisors ending with 8,7, 1,2,3 .

Click Here => To check More Examples of Ekadhiekna Purvena

Vestanas

Vestanas also called as Osculators is General Method in Vedic Mathematics, which is used to find a number is exactly divisible by the mentioned divisor.(EXPLORE MORE IN APP)

Calendars

Vedic Math Day Prediction Technique

Let us understand the technique to find the day on which any date falls for a single year. This technique will work for any one year only.

Single Year Calendar

Let us assume that we are dealing with the year 2004.

Given below is a key on the basis of which you will be able to tell me the day on which any date falls for the year 2004.

Key

417 426 415 375

There are twelve numbers. Each number represents a month of the year. The number '4' represent January, the next number '1' represent February, the next number '7' represent March and so on up to the last number '5' which represent December.

Basically, each of these number represents the first Sunday of its corresponding month.

Hence, 4 January is a Sunday ; 1 February is a Sunday ; 7 March is a Sunday and so on…

On the basis of the above information, you will be able to predict the day for any given date.

Example

What day is 6th January?

According to the key, 4th January is a Sunday. Hence, 6th January is a Tuesday

What is the day on 4th August?

Since August is the eighth month of the year, we use the eight digit in the key. The eight digit that represent August is 1. We know that it represent the first Sunday of August. Since 1st August is a Sunday and so 4th August is a Wednesday.

On which day does Christmas fall in the year 2004?

The number 5 represents December. We know 5th December is a Sunday. Adding 7, we get 12th as the next Sunday, then 19th & 26th as the next Sundays. So December 25th is a Saturday. Thus Christmas falls on a Saturday in the year 2004.

What day is 23rd March?

The third number in the key, which represents March, is 7. So, 7 is a Sunday. The next Sundays are 14th and 21st March. Since we know that 21st March is a Sunday and therefore 23rd March is a Tuesday.

This keys will work only for the year 2004. Since the first Sundays of every month keep on changing, we will have a different key for every year. The Key for the next few years is as given below.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	2	6	6	3	1	5	3	7	4	2	6	4
2006	1	5	5	2	7	4	2	6	3	1	5	3
2007	7	4	4	1	6	3	1	5	2	7	4	2
2008	6	3	2	6	4	1	6	3	7	5	2	7
2009	4	1	1	5	3	7	5	2	6	4	1	6

Vedic Math Date Prediction Technique

Now let us study a system of finding the day on which any date falls for the entire century. After studying this technique, you shall be able to predict the day on which any day falls from 1st January 1901 to 31st December 2000.(EXPLORE MORE IN APP)

Before proceeding with the technique, Let us note down keys of the months. This key will remain the same for any given year from 1901 to 2000

JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
1	4	4	0	2	5	0	3	6	1	4	6

You have to memorize this months keys. To facilitate memorizing the key. We have made small verse. The verse will help you to memorize the key easily.

It's the square of twelve = **144**

and the square of five = **025**

and the square of six = **036**

and one-four-six = **146**

In this method of calculation, the final answer is obtained in the form of remainder. On the basis of this remainder we are able to predict the day of the week.

DAYS KEY	SUN	MON	TUE	WED	THU	FRI	SAT
REMAINDER	1	2	3	4	5	6	0

The days key is very simple and needs no learning. Next, we will do an overview of the steps used in predicting the day.

Steps

Take the last two digits of the year (If the year is 1953 then take 53)

Add the number of leap years from 1901

Add the month key

Add the date

Divide the total by 7

Take the remainder and verify it with the day key

These are the six steps that are required to predict the day. Note that the second step requires us to calculate the number of leap years from 1901. A year is a leap year if the last two digits are divisible by '4'. Hence, the years 1904, 1908, 1912, 1916, 1920, etc are all leap years.(DOWNLOAD FREE BOOK NOW)

Phone No. - +91-83960-87015, +91-79880-07015