

## Mathematrix

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Hope the tips given in previous three editions boosted the kids interest in mathemat(r)ics. A small request for those who suggested us to increase the number of pages for this article. Either it may be food or medicine, you need to take in right quantity. You are all aware that increase in quantity might cause in-digestion or health disorder. Still we appreciate your interest in learning techniques quickly. This time we will discuss about : Why we usually fail to remember the numbers we see, incidents we face and the names of persons we meet? What needs to be done to overcome this? some tips to do some complex calculations in easy way, problem solving techniques and many more.

*Note : You should teach these techniques to kids only after they learn ordinary methods. Then only they can appreciate these tips and the concepts behind. It is always better to use normal methods to verify till you are comfortable.*

**Concentration :** Concentration plays major role in our day to day work. If we want to remember something, we can remember. Did we forget our names? Our Date of birth? Our phone numbers? (There is possibility that we might forget phone numbers as we are feeding those numbers either in organizer or cell phone once and that's all.) We do not remember the names and phone numbers of new friends because we do not pay much attention to them. So how to remember those? We can remember a number in so many different ways. You can remember them by repeatedly memorizing the number, by recognizing any specific pattern and many more. For example try to remember 13524, car number 3XSD927. At the end of this article, lets see whether you remember the numbers.

For previous multiplication tip, we received many queries asking about multiplications like  $52 \times 57$  etc. This kind of multiplications also can be done taking 50 as base. You can check the procedure below.

**Extension to previous multiplication tip:** Let us see two multiplications  $48 \times 43$  and  $52 \times 57$ . Notice the difference base 100 to base 50 keenly.

$48 \times 43 = ?$ $\begin{array}{r} 48 \quad -2 \\ 43 \quad -7 \\ \hline (48 - 7) 14 \\ \quad 2 \\ \hline (20.5) 14 \\ \quad 2064 \end{array}$	$52 \times 57 = ?$ $\begin{array}{r} 52 \quad +2 \\ 57 \quad +7 \\ \hline (57 + 2) 14 \\ \quad 2 \\ \hline (29.5) 14 \\ \quad 2964 \end{array}$
Add decimal part to next number.	

*We should be grateful to our ancestors who have given us valuable treasure. We thank our teachers, because of whom we developed interest in mathematics, friends and brothers, who shared their knowledge. In fact, they deserve the compliments sent by you. We are just presenting what we heard from them.*

In the above examples, we took 50 as base and wrote the difference adjacent to the numbers (48 is 2 short of 50, thus 48 -2 is given. Similarly, 52 is 2 more than 50, thus 52 +2 is given). Now, when we multiply, the units and tens place in answer is decided by multiplying the differences (-2 x -7 and 2 x 7 respectively). Now to figure out the hundreds and thousands place, we need to add the actual number and difference crosswise (48-7 or 43-2 and 57+2 or 52+7 respectively) and divide by 2 (As base 50 is half of 100, which is square of 10). The decimal part is to be added to the previous tens place number (In 20.5 and 29.5, 5 (decimal part) is to be added to tens place). So we got 20(5+1)4 and 29(5+1)4, which is equal to 2064 and 2964 respectively.

In the same way, we can find the product of 23 x 22 and 32 x 28 taking 25 as base. While calculating hundreds and thousands place, slight difference apply. For more details check the adjacent figure. In the second case (32 x 28), the decimal part is 75. So 75 is to be added to 21, which is equal to 96.

$23 \times 22 = ?$ $\begin{array}{r} 23 \quad -2 \\ 22 \quad -3 \\ \hline (23 - 3) 06 \\ \quad 4 \\ \hline (5) 06 \\ \quad 506 \end{array}$	$32 \times 28 = ?$ $\begin{array}{r} 32 \quad +7 \\ 28 \quad +3 \\ \hline (32+3) 21 \\ \quad 4 \\ \hline (8.75) 21 \\ \quad 896 \end{array}$
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Try the following multiplications using formula and verify your answer.  
 93 x 88 =? 58 x 53 =? 27 x 29 =? 44 x 47 =? 34 x 31 =? 107 x 104 =?

$$\begin{array}{r} 3414 \\ 340 \\ \hline 437 \end{array}$$

See the adjacent picture. The equation looks incorrect, but it is not. Can you justify it? Take few minutes ... Think ... Do not give up! We discuss about this later. Now, do you remember the 5 digit number and car number we discussed in the beginning? Try to recollect it. You remembered! Good. You could not recollect it. No worries. We will tell you.

The 5 digit number is 13524. It can be remembered in two ways. Within 5 (including 5) 1,3,5 are the only odd numbers. 2 and 4 are even numbers. If you write odd and even numbers in order, you get the 5 digit number. Second way is to remember : 13 in the beginning, 4 at the end, then the product goes in the middle.

Now the car number 3XSD927. We can read it as 3 times (X stands for multiplication) Single Digit (SD stands for single digit) 9 is 27. Do you agree?

Now coming to earlier equation : if we see that in a mirror, we can find the equation as shown in the adjacent figure. There are many more interesting things like this. We will go through them in next issue.

*How fast can you calculate 18 decimal places for  $1/19$ . 10 minutes? 5 minutes? 2 minutes? We can do that in 30 seconds. How? In next issue ...*

#### Do you know?

Spelling of numbers starting from 'Zero' to 'Hundred' does not contain an alphabet 'A'.

*The chief function of your body is to carry your brain around.*

*- Thomas Alva Edison.*

$$\begin{array}{r} NINE \\ ONE \\ \hline TEN \end{array}$$