

Mathematrix

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Hope you thoroughly enjoyed the tips given in previous edition of Sanghamitra. In this edition also we will discuss some more problem solving techniques, techniques to increase sharpness of brain etc.

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.

The ability of one person varies from another. One of you might be an expert in playing Veena, another might be an expert in playing Tabla, one might be an artist, like this, everyone is an expert in different fields. This depends on their dedication, hard work and mainly the instructions given by their brain. For example, if you think of an unresolved problem before going to bed, the possibility of getting a solution is likely by the time you get up in the morning. How is this possible? The thoughts are recorded in brain and it works in the night even though you are sleeping. Unix users call this as 'Back ground process'. You can also use these techniques. Instead of keeping your brain idle, you can keep it working by giving some work. In the similar way, if you think of getting up at 7 O' clock in the morning before going to bed, the possibility of waking up around that time is possible. That means brain sets an alarm. In Unix users' terminology this is called running a cron job. If we keep discussing, this is going to be a vast area.

Coming to previous issue, we learnt how to calculate square of a number ending with 5. We learn extension to that formula now. If you want 67×63 , how do we do? One way is simple multiplication.

The same multiplication can be done by writing $(65 + 2)(65 - 2)$, now using $(A+B)(A-B) = A^2 - B^2$ formula, $65^2 - 2^2 = 4225 - 4 = 4221$. Did you notice, we used the formula learnt in the previous issue while finding 65^2 . Most of you know this.

There is another way to find this. The number in tens place is same (i.e., 6). The sum of numbers in units place is 10 (i.e., $7+3$). Now for the product of 67×63 , multiply the number in tens place with its successive number and write it in hundreds and above places; multiply the numbers in units place and write it in ones and tens place. So in our example, 6 is in tens place and product of 6 and its successive number ($6 \times 7 = 42$) occupies thousands and hundreds places; now the product of numbers in units place ($7 \times 3 = 21$) fills units and tens place; so finally we got 4221. See below figure A (in next page) for details.

Similarly when you multiply $151 \times 159 = (15 \times 16)(1 \times 9) = 24009$. Verify your answer. Figure B (in next page) will give you the explanation.

$67 \times 63 = ?$

పద్ధతి 1:

$$67 \times 63 = (65 + 2)(65 - 2) = 65^2 - 2^2$$

$$= 4225 - 4 = 4221.$$

పద్ధతి 2:

$$\begin{array}{r} 10 \\ + \\ 67 \\ \hline 4221 \end{array}$$

$67 \times 63 = (6 \times 7)(7 \times 3) = 4221$

$(6 \times 7)[25] = 4225$

Figure A

$$151 \times 159 = (15 \times 16)(1 \times 9)$$

$$= 24009$$

Figure B

Before going to next topic, let us see some interesting thing. Read the sentences in figures C. What did you notice? Read the sentences carefully.

Any glitches? Any typos? Read it again and again to verify. Yes! You are right. In first sentence 'A' is given twice and in second sentence the word 'IS' is given twice. But you could not make it. Why? It is not your problem. It is your brain that ignores unnecessary information. Not only that, our brain can do lot many things successfully without our concern. For example if a mosquito is flying around your eye, your eye lids closes without your intension. That is why if something happens very quickly, people say it happened within the time your eye lid closes.

When you are driving a car, suddenly if some paper flies on to your car windshield, I know you closed your eyes for a moment. This is natural. Now see the figure D below. What is it?

Are you saying Duck? Are they saying rabbit? Yes! Both are correct! It depends on the angle you look at it. See figure E (in next page). By turning 90° counter clockwise, the duck became rabbit. Isn't it fun?

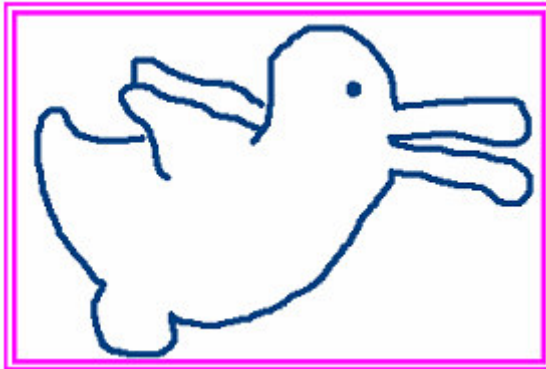


Figure D

Based on the experiments, Scientists in the past announced that based on the usage of left brain or right brain, a persons ability, attitude can be predicted to some extent whether he shines as a sports personality, literate, writer, politician etc.

**A TIP, A
A DAY
KEEPS YOU
SMART**

**IF YOU PUT
LITTLE EFFORT
MATH IS
IS EASY**

Figure C

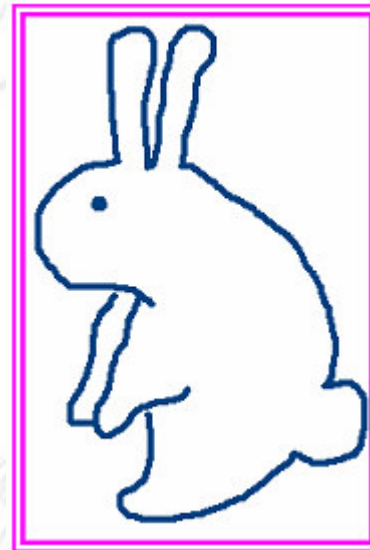


Figure E

Let us learn some more in the next issue of Sanghamitra. Hope you enjoyed the tips.

Do you know the significance of the below number?

142857

More details in the next issue ...

[To be continued In the next edition coming for Telugu New year (Ugadi)]