



Mathematics Newsletter

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Pi Approximation Day: 22/7 (22nd July)

“Pi Approximation Day” also known as “Casual Pi Day” is devoted to the mathematical constant $Pi(\pi)$. Pi denotes the relationship between the circumference of a circle and its diameter.

Pi Approximation Day is observed every year on July 22 all around the world. The fraction $22/7$ is an approximate value of Pi , and there behind lays a specific reason why this day is observed on July 22. This day is celebrated on July 22 every year because the value of Pi is denoted by the fraction $22/7$. Here, in the fraction $22/7$ which denoted Pi , the numerator 22 symbolizes the date (22nd day of the month) and numerator 7 indicates the month (July).

Reportedly, *Pi Approximation Day* and *Pi Day* are closely linked to each other, and *Pi day* is observed on March 14 every year all over the world. As we know the value of Pi is 3.14, the *Pi day* was founded by Physicist Larry Shaw in 1988 at the Exploratorium. San Francisco science museum revealed that the date for *Pi Day* was decided 14 March that is the number of the Pi (3.14). The U.S. House of Representatives also supported *Pi Day* in 2009. However, the *Pi Approximation day* is marked on July 22 every year.

It is reported and, as per mathematical experts, Pi is known for almost 4000 years. It is also believed that Mathematicians began to use the Greek letter π in the 1700s. Pi was presented by William Jones in 1706, and the use of the symbol of Pi was popularized by Leonhard Euler, who

adopted it in 1737. An 18th-century French mathematician, Georges Buffon, invented a way to calculate π based on probability.

$Pi(\pi)$ is the ratio of the circumference of a circle and its diameter.

Pi is an irrational number and it cannot be expressed as a ratio of whole numbers

Pi is the never-ending and never-repeating number

The value of Pi is $22/7$ or 3.14

Pi value is determined up to 12 trillion digits after the decimal points

Pi Approximation Day is celebrated in many different ways such as having lots of pie and discussing the significance of the Pi . It is also observed that many schools and education classes also hold contests to find out which student remembers the Pi to its maximum number of decimal places. They also arrange many Pi games that are conducted for the students.

According to the experts, Pi is the mathematical constant with the most acknowledgement and recognition in the world. Scholars and experts also regard Pi as the most significant and interesting number in all mathematics.

Read some interesting facts about Pi below:

The $Pi(\pi)$ symbol has been used regularly in its mathematical sense for the past 250 years.

The $Pi(\pi)$ is the first letter of the Greek word "periphery" and "perimeter" first letter.

In the Greek alphabet, the sixteenth letter is π (piwas). P is also the sixteenth letter, in the English alphabet.

Pi is also called as the "circular constant" "Ludolph's number" or "Archimedes' constant". ■

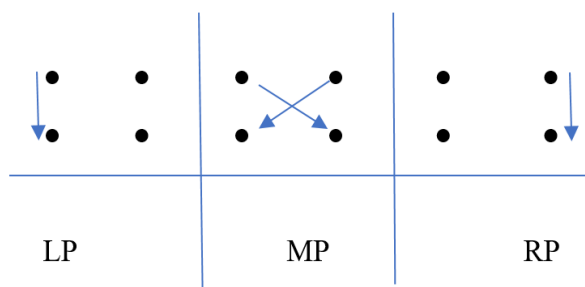
Vedic Mathematics

Study of Mathematics in India is as old as Vedas. Many references of knowledge of Mathematics are found in Vedic and consequent literature. There were many prominent Mathematician in ancient time.

Here we will discuss the method of Multiplication which was used by our Mathematicians in ancient time. This method will take minimum time for the calculation. First we will understand the multiplication method for two digits' numbers.

Method:

When the multiplicand and the multiplier both have two digits then answer will have three parts. The pattern of Multiplication is explained as:



This Method is called *UDHVA-TIRYAK* in Vedic Mathematics.

Commonly it's called "*UDHVA-TIRYAK*" Method. (*UT* Method)

In Sanskrit, it is called "ऊर्ध्वतिर्यभ्याम्" and in English, "Vertically and Crosswise" (Criss-Cross).

Shortcut to Multiply 2 digit numbers:

Formula :

$$(ax + b)(cx + d) = acx^2 + (ad + bc)x + bd$$

Process: (Left -> Right)

1. Vertical Multiplication of 1st digits of the numbers.
2. Crosswise Multiplication Addition (i.e. Crosswise Multiplication and adding them).

3. Vertical Multiplication of last digits of the numbers.
4. For all steps, except 1st step, each step (compartment) needs to have ONLY 1 digit. If not, then carry forward initial digits to previous compartment. ■

Example: 1

$$\begin{array}{r} 52 \\ \times 41 \\ \hline 20 \quad 05 \quad 02 \\ \quad \quad 08 \\ \hline *1 \quad 13 \\ \hline 21 \quad 3 \quad 2 \\ = 2132 \end{array}$$

Example: 2

$$\begin{array}{r} 67 \\ \times 38 \\ \hline 18 \quad 48 \quad 56 \\ \quad \quad 21 \\ \hline *7 \quad 69 \\ \quad \quad *5 \quad 6 \\ \hline 25 \quad 4 \quad 6 \\ = 2546 \end{array}$$

1. $52 \times 41 = 2132$

2. $67 \times 38 = 2546$

Compiled by Dr. Janki J. Vashi

Let's Enjoy Maths..!!!

Are you afraid of math too? Has math always been a real task for you? Do you feel the math gene myth is for real?

Well, this is here to break that math gene myth for you. Mathematics can be really fun and entertaining if it's looked at the right way.

All of us have been through that scary phase where we have crushed our

minds into understanding Math and the logic behind it and yet on exam day, have ended up all confused about what is the question asking for. But, let's have a different approach towards it, let's look at math as a game, and then it would never feel like math questions are hard. Math becomes all the way more interesting when explored through a different approach. Every question, equation, and diagram of math speaks volumes of information and as the rule goes by most of the steps of your answer are in the question itself.

Tricky Yet Fun Math Questions with Solutions

It's time for you to brainstorm and put your minds to actively work to challenge your thinking ability and boost up your math skills, with the blend of these tricky, logical, seemingly hard math questions.

Question 1.

If $1 = 3, 2 = 3, 3 = 5, 4 = 4, 5 = 4$, then $6 = \underline{\hspace{2cm}}$?

a. 2 b. 5 c. 3 d. 4

Ans. c. 3

If you notice the pattern '*one*' = 3, '*three*' = 5, and so on, based on the number of letters, a number is spelled out. So since '*six*' has three letters, therefore, $6 = 3$, i.e. '*six*' = 3.

Question 2.

I am an odd number. Take away one letter and I become even. What number am I?

Ans. The answer to this question is '*seven*' which is an odd number and when you remove '*s*' from '*seven*' it becomes '*even*'.

Question 3.

Whether added or multiplied together, which three numbers have the same answer?

Ans. $1 + 2 + 3 = 6$ and $1 \times 2 \times 3 = 6$; so the answer is 1, 2 and 3.

Question 4.

Jessica bought a basket containing 5 apples. If she had to divide the apples, in such a way that each of her 5 students gets 1 apple and 1 apple remains in the basket. How will she do it?

Ans. Jessica can provide 4 apples to 4 students each and give the 5th student the basket with the apple still in it.

Question 5.

If $1 = 5$; $2 = 25$; $3 = 325$ and $4 = 4325$; then $5 = \underline{\hspace{2cm}}$?

Ans. The immediate answer that would pop up in your mind looking at the pattern is 54325. But that isn't the correct answer. The correct answer is given in the question itself since the question states that $1 = 5$ then $5 = 1$.

Question 6.

Consider there are 85 people in a warehouse, out of which some have been turned into zombies while some are still alive. If the ratio of zombies to living human beings is 2:3, calculate the total number of zombies.

Ans. We are given that there are 2 zombies for every 3 humans.

$$2 + 3 = 5$$

To figure the total no. of groups of humans and zombies, we divide the total strength by 5.

$$85/5 = 17.$$

Now, to get the total no. zombies and humans, we will multiply 17 by 2 and 3 respectively. The answer is thus 34 zombies and 51 humans.

Question 7.

Looking at this series: 22, 21, 23, 22, 24, 23, ... What number should come next?

Answer: If you notice, the alternate numbers in the series are creating a consecutive number pattern. So following the pattern, the answer would be 25. ■

*Courtesy: <https://www.turito.com>
Compiled: Ms. Komalika Jain (M-23)*

Fermat's Last Theorem

The equation was first formulated by French mathematician Pierre de Fermat in 1637.

It was a problem that had baffled mathematicians for centuries -- until British professor Andrew Wiles set his mind to it.

"There are no whole number solutions to the equation

$$x^n + y^n = z^n, \text{ when } n \geq 2 "$$

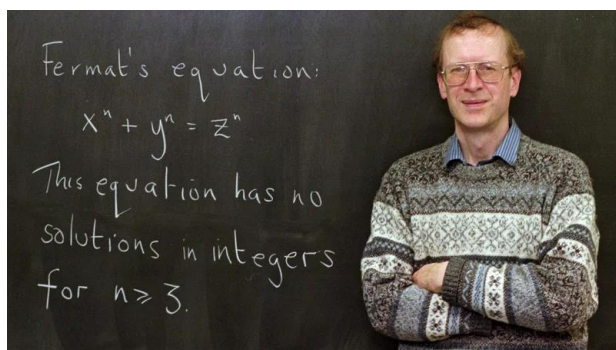
Otherwise known as "Fermat's Last Theorem", this equation was first posed by French mathematician Pierre de Fermat in 1637, and had stumped the world's brightest minds for more than 300 years.

In the 1990s, Oxford professor Andrew Wiles finally solved the problem, and this week was awarded the hugely prestigious 2016 Abel Prize -- including a \$700,000 windfall.

Learning of the award, Wiles told the University of Oxford: "It is a tremendous honour... Fermat's equation was my passion from an early age, and solving it gave me an overwhelming sense of fulfilment.

"It has always been my hope that my solution of this age-old problem would inspire many young people to take up mathematics and to work on the many challenges of this beautiful and fascinating subject."

"Wiles is one of very few mathematicians -- if not the only one -- whose proof of a theorem has made international headline news," said the Abel Committee.



"In 1994 he cracked Fermat's Last Theorem, which at the time was the

most famous, and long-running, unsolved problem in the subject's history."

Wiles, 62, first became fascinated with the theorem as a 10-year-old growing up in Cambridge, England, after finding a copy of Fermat's Last Theorem at his local library.

"I knew from that moment that I would never let it go," he said. "I had to solve it."

"I was very lucky that not only did I solve the problem, but I opened the door for a whole new era in my field," said Wiles.

"You never forget the moment you have these great breakthroughs -- it's what you live for," he added. ■

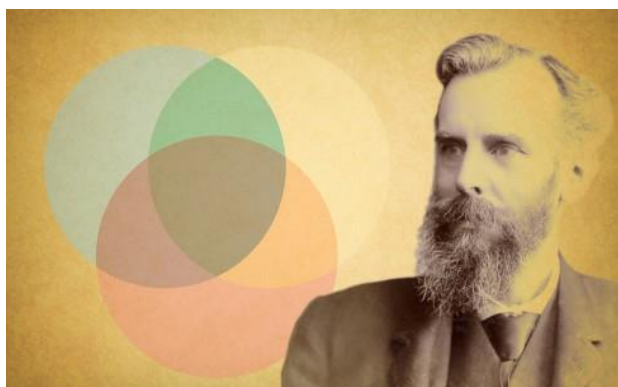
By: Sheena McKenzie, CNN

Courtesy: CNN

Compiled: Ms. Isha Jain (M-22)

Mathematicians born in August

John Venn, born on the 4th of August 1834, was an English logician and philosopher noted for introducing the Venn diagram, used in the fields of set theory, probability, logic, statistics, and computer science. When it comes to mathematics we use the Venn diagrams especially with sets.



It is very easy to understand any set operations using this diagrams. Basically we learn the definition of union, intersection, symmetric difference and any other things using the diagrams.

Arthur Cayley, born on the 16th August 1821, was a British mathematician.



He helped found the modern British school of pure mathematics. As a child, it seems that he enjoyed solving complex maths problems for amusement. He postulated the Cayley–Hamilton theorem—that every square

matrix is a root of its own characteristic polynomial, and verified it for matrices of order 2 and 3. He was the first to define the concept of a group in the modern way—as a set with a binary operation satisfying certain laws. Formerly, when mathematicians spoke of “groups”, they had meant permutation groups. Cayley’s theorem is named in honour of Cayley. ■

Activities

Felicitation:

Our students, Mr. Mihir and Ms. Bhavisha got admission to a prestigious college in the country by cracking the postgraduate entrance exam, which is the remarkable success. To congratulate these well deserving students, Sir P. T. Sarvajanic College of Science has organized a felicitation program. Eminent personalities, Mr. Ketan Desai (President, Alumni Association of our college) and Mr. Shailesh Desai (Treasurer, Alumni Association) have graced the occasion by their presence and by sharing words of wisdom. Mr. Mihir Vadi was felicitated by Mr. Ketan Desai and Ms. Bhavisha was felicitated

by Mr. Shaileshbhai Desai by a Book Bouquet.



Details of Students

Mr. Mihir Vadi, student of B. Sc. (Mathematics) qualified in JAM-2022

with AIR- 51 and secured an admission in IIT-Bombay for M. Sc. Program.

Ms. Bhavisha, student of B. Sc. (Physics) cleared all the tests (written/oral) for her master's program and secured an admission in IISER (Indian Institute of Science Education and Research), Thiruvananthapuram.

Principal Dr. Pruthul Desai has congratulated both the students for their achievement and wished all the luck for bright future on behalf of the Sarvajani Education Society and motivated other students to bring the best out of themselves to achieve all the success in life. Both the students are pride of our college. Best wishes again to the students.

Mr. Ketan Desai, President of Alumni Association, offered lifetime membership of the Alumni Association to both the students and announced a waiver of membership fees.

The entire programme was conducted by Prof. Keelin Mahajan.

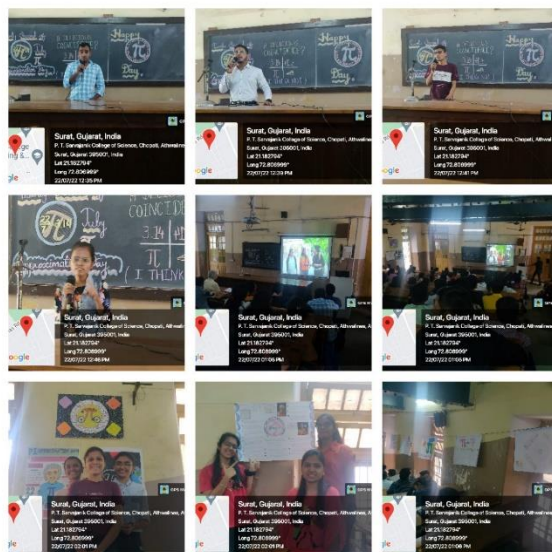
At last, Dr. Dhiraj Shah congratulated and offered a vote of thanks. ■

Celebration of “PI Approximation Day”: Poster making competition:

“PI Approximation Day” was celebrated by the Department of Mathematics on 22nd July, 2022.

The students gave self-prepared lectures about PI, in which the remarkable thing about lectures given by students is that the students must have really worked hard for the lectures, done the proper reading or done the necessary research. The celebration was done by the students in a very enthusiastic atmosphere.

Finally, the play prepared and recorded by the students on the topic “About PI” was screened. The play was very effective.



There were 19 teams in which 46 students took part actively and exuberantly.

Result:

First Prize:

Poshiya Peri Vipul (PM-055)

Second Prize:

Patel Rahi Prafulchandra (M-068)

Joshi Vaishnavi Vijaykumar (M-024)

Rathod Mili Ravindrakumar (M-081)

Third Prize:

Sahu Rajlaxmi Narasingha (M-087)

Ropiya Kaushalya Deeparam (M-084)

Jayswal Gayatri Amritbhai (M-111)

Third Prize:

Wala Komal Nagji (MS-043)

Prajapati Aarunie Prajesh (PM-056)

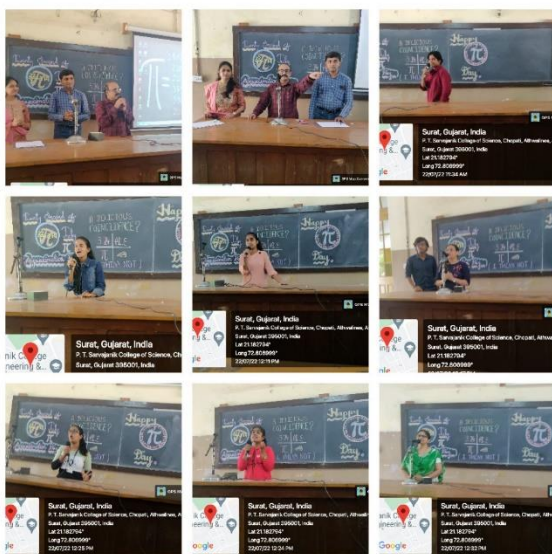
Appreciation Prize:

Mistry Jahnvi Anilbhai (PM-030)

Patel Meharshi Rajeshbhai (MS-027)

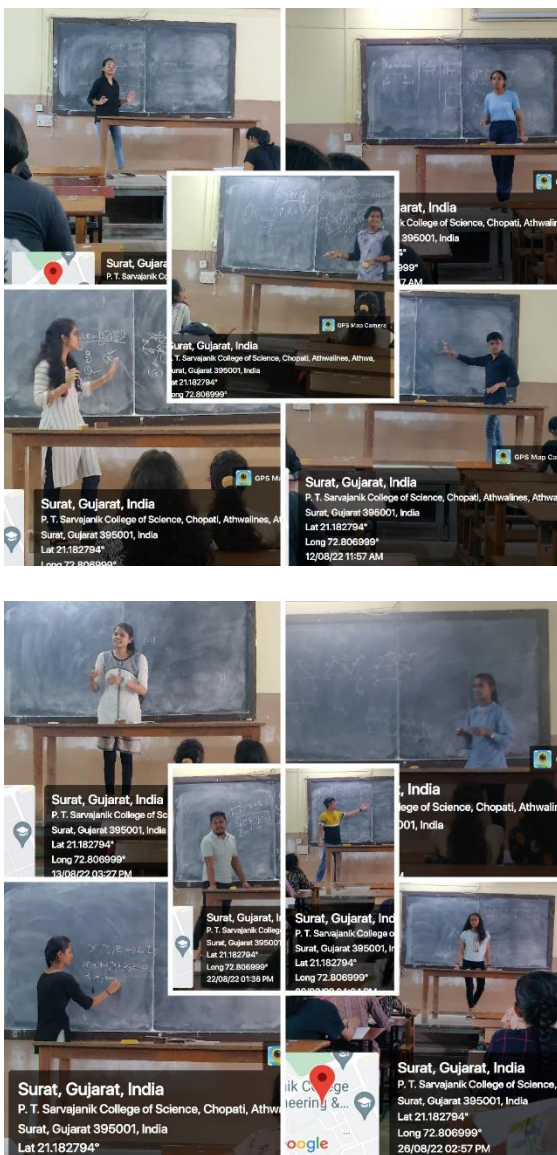
Mistry Pari Miteshbhai (PM-032)

It was indeed a very motivational activity of the department.



Seminars:

The third Year B. Sc. Students are encouraged to discuss on the topic related to the curriculum in the classroom. The students participated enthusiastically in this kind of activity. The Department of Mathematics congratulated all the students, who took part. ■



Problem

Let a, b and c be real and positive parameters. Solve the equation

$$\sqrt{a+bx} + \sqrt{b+cx} + \sqrt{c+ax} = \sqrt{b-ax} + \sqrt{a-cx} + \sqrt{c-bx}. \blacksquare$$



$$i^2 + 1^2 = 0^2$$

