Anantya - Beyond

Infinity

Vol-V

Mata Sundri Ji

Mata Sundri Ji (Gurmukhi alphabet: ਮਾਤਾ ਸੁੰਦਰੀ) was the daughter of Ram Sarana, a Kumarav Khatri of Bijwara, in present-day Hoshiarpur district. Born on 23rd Dec.1667, She was the second wife of Guru Gobind Singh, the tenth guru of the Sikhs. The couple married at Anandpur on 4 April 1684 and had one son, Sahibzada Ajit Singh born at Paonta on 26 January 1687. She holds a special place in Sikhism for the role she played in leading Sikhs after the ascension of Guru Gobind Singh. A memorial in her honour stands in the compound of Gurdwara Bala Sahib, New Delhi. Hers was a remarkable personality that blended to a distinction, the diverse roles of a devoted wife, an ideal mother and a confident and far- sighted guide of the community. After the death of Guru Gobind Singh Ji, the Sikh masses found themselves in a state of disarray because of State terror, in addition to other hardships. In this difficult situation, it was Mata Sundri Ji who served as their guide, raised their morale, and virtually breathed new life into them through her wisdom, erudition and spiritual power.

For about forty years Mataji stayed at the premises now occupied by Gurud wara Mata Sundri Ji. The institution of higher learning built adjacent to it is an apt tribute to her. Students from diverse religious backgrounds, faiths, castes and echelons of society have come together here and excelled in their chosen areas of interest, be it academics, sports, or extra- curricular activities. As per the values promulgated by Mataji, equal opportunities and facilities are provided to all. The college imbibes her ideologies and it is an index of our homage to her memory, that this institution has been named after her.

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From Principal's Desk

Heartiest greetings!!!

DEAR YOUNG FRIENDS!

I extend my heartiest wishes to the Departments of Mathematics for coming up with the fifth edition of their e-magazine, 'Anantya-beyond Infinity'. This magazine gives an insight into the range and scope of the imagination and creativity of our students and faculty members.

It is a platform for our students to showcase their creative abilities, hidden dreams and aspirations for writing. The current issue of Anantya is a compilation of several articles, poems, quizzes, experiences and the extra-curricular achievements of the departments. Such academic endeavours not only provide opportunity to the faculty to present their ideas and opinions in a logical sequential manner but also enable students to unravel their creativity. I am extremely impressed by the talent of our dear students who have contributed in this beautiful magazine.

I applaud the editorial team for the hard work and dedication they have invested in realising this goal, and wish my dear students success in all future accomplishments.

Dr. Harpreet Kaur
Principal

From Editor's Desk

Teacher-in-Charge
Ms. Mandeep Walia

Chief Editor
Dr.Ramita Sahni

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Muskan Lakra
Hitika Narang
Rashika Dabas
Jasnoor Kaur

Muskan Lakra

Hitika Narang

Rashika Dabas

Jasnoor Kaur

From Teacher-in-Charge Desk

It gives me immense pleasure to pen down my thoughts and beliefs for the fifth issue of our Department's creative and inspiring e-magazine: Anantya beyond Infinity. Anantya is an example of our creativity and a tangible evidence of the positive successful strides of our Department which is learner- centric.

In this publication, we offer a wide variety of articles which are contributions by the current students, with special write ups by our faculty members. The edition of e-magazine also provides a glimpse of the activities that have happened in this academic year i.e. 2020-21. These includes webinars, short term course, orientation tour, seminar and counseling session for our students.

Speaking of session 2020-21 activities, a webinar on 'Technology-Enabled Higher Education in India: Challenges and Opportunities' was organized on 15th June 2020 for the faculty of our college. A short term skill development certificate course on 'Python for Machine Learning and Data Science' was organized on 31st October 2020. An orientation program to welcome our dear first years was conducted online on 18th November 2020. A talk on 'Principal Component Analysis: Data Reduction using ideas from matrix' was organized on 12th January 2021. Lastly, a skill based counseling session was organized for all students on 'National and International Opportunities for Higher Education on 6th February 2021.

I convey a word of thanks to the entire editorial team for their endless efforts. We hope that our readers have an enriching experience. Happy Reading!!

Ms. Mandeep Walia
Teacher in - charge

Our Faculty

Ms. Mandeep Walia

Dr.Rama Verma

Dr. Rashmi Verma

Ms. Gurpreet Kaur

Ms. Sonia Aneja

Dr. Meena Baweja

Dr.Pooja Sharma

Dr.Preeti

Dr.Karuna Mamtani

Dr. Ramita Sahni

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Kinchat Kaur

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Anshika Gahlot

Executive Members

Ameen Mehta
Garima Aggarwal
Khushbu Singh
Paryukti

Annual Report

NATIONAL WEBINAR ON TECHNOLOGY : Enabled Higher Education in India

Department of Mathematics organized a National Webinar on Technology-Enabled Higher Education in India: Challenges and Opportunities on June 15th, 2020 at 11 am through google meet. The key speakers were Prof. (Dr.) A.K. Bakshi, Vice Chancellor, PDM University Bahadurgarh Haryana and Dr. Arpita Gopal Co-Founder & Director, Juno Software Systems Pvt. Ltd, Pune. The webinar commenced with the welcome of the guests by Ms. Sonia Aneja, Convener of the webinar, Department of Mathematics and Ms. Mandeep Walia, Teacher-in- charge, Department of Mathematics.

The main objective of the webinar was to provide knowledge about technologies in higher education in India in today's virtual scenario. Valuable information on development of MOOCs and how it provides a good platform for interactive and remote learning was discussed. The participants were enlightened with various initiatives of MHRD like ARPIT to improve and bring about innovations in pedagogy. It was an interesting and meaningful session for the professional development of the participants. There were over 175 participants in this webinar. An e-certificate was given to each participant.

In the end, Ms. Mandeep Walia proposed a vote of thanks.

ORIENTATION PROGRAM

The orientation program was organised on 18th November 2020 by Department of Mathematics to welcome the first year students. The event started with the college prayer followed by the welcome speech by Ms. Mandeep Walia, TIC, Department of Mathematics. The teachers of the department introduced themselves to the students. To familiarise the students with the college, a virtual tour of the college was given to them. In the end, some useful tips about online teaching and their methods were discussed.
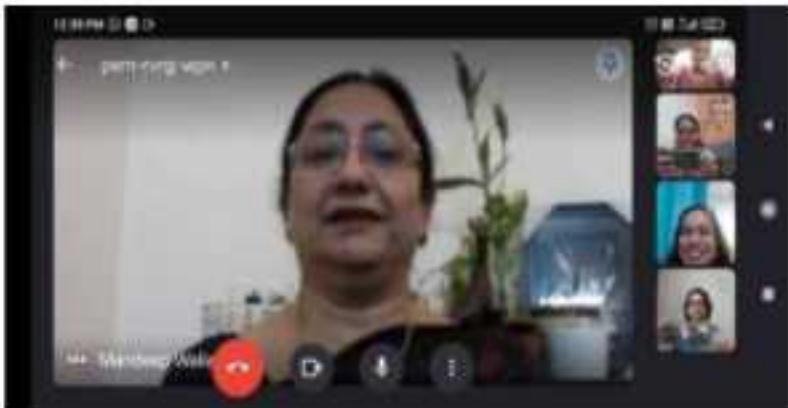
Short Term Skill Development Certificate Course

Department of Mathematics and Internal Quality Assurance Cell (IQAC), Mata Sundri College for Women in collaboration with 9LedgePro-Microsoft Partner Network organized a Short Term Skill Development Certificate Course on "Python for Machine Learning and Data Science". The course commenced on 31st October 2020 with an inaugural ceremony which began with a melodious rendition of the college prayer. The Course Coordinator, Ms. Sonia Aneja welcomed the Principal Prof. Harpreet Kaur, the Course Speaker Mr. Parth Shukla, Co-founder, 9LedgePro-Microsoft Partner Network and the Teacher-In-Charge (TIC) of Department of Mathematics Ms. Mandeep Walia. The Principal then addressed the participants and motivated them with encouraging words. TIC also wished the students all the best for the successful completion of the course. The duration of the course was 30 hours. There were 12 live sessions, out of which 6 sessions of 3 hours each were held on weekends and 6 sessions of 2 hours each were held on the weekdays. Live sessions were conducted on Microsoft Teams. It was attended by 53 students.

The objective of the course was specifically to introduce various concepts of Python programming which would enable the participants to gain basic understanding of the tools and techniques involving in Data Sciences while providing exposure to different applications of Python through projects such as sentiment analysis, detection of fake

news etc. Several useful topics like Python Data Structures, Python Programming Fundamentals, NumPy, Pandas and Matplotlib, Introduction to Machine Learning (ML) were covered. Students created python scripts and worked on the data-sets to apply ML. The Instructor interacted with the students on one-to-one basis and took their doubts in each session. 6 assessments and a final test were taken during the course to strengthen their knowledge of the Python language.

The live sessions concluded on 22nd November 2020 with a closing ceremony where the TIC, Ms. Mandeep Walia and the Course Coordinator Ms. Sonia Aneja proposed a vote of thanks and some of the participants shared their experiences and feedback of the course. The students participated in full enthusiasm and found the course beneficial and interesting. Successful students were given E-Certificates at the end of the course.
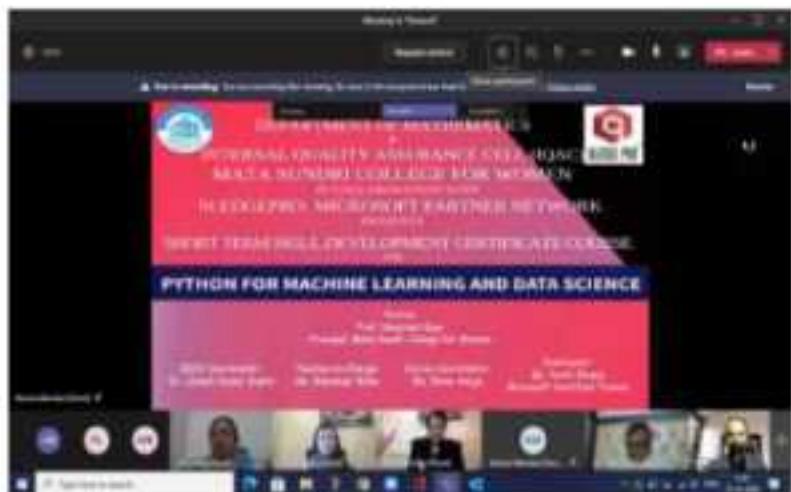
TALK ON PRINCIPAL COMPONENT ANALYSIS: Data Reduction using ideas from matrix

Department of Mathematics organized a Talk on "Principal Component Analysis" on 12th January at 11 am through Google meet. The guest speaker for the Talk was Prof. Aparna Mehra, Mathematics Department, IIT Delhi. It commenced with the welcome of the guest by Ms. Sonia Aneja, Faculty, Department of Mathematics and Ms. Mandeep Walia, Teacher-in- charge, Department of Mathematics.

The objective of the talk was specifically to introduce the basic concepts of Principal Component Analysis amongst the students and to explain its use in areas of pattern recognition and signal processing. It is one of the most popular multivariate statistical techniques today which make use of two most important software: R and Python.
The students participated in full enthusiasm and found the Talk beneficial and interesting. In the end, Dr. Meena Baweja proposed a vote of thanks.

NATIONAL AND INTERNATIONAL OPPORTUNITIES FOR HIGHER EDUCATION

A skill-based counselling session was organised on the topic "National and International Opportunities for Higher Education". The objective of the session was to generate awareness among students on the pros and cons of different streams, courses, post-graduate educational options both nationally and internationally as well as the diverse career paths offered to them. The session stressed on the importance of skill development to match pace with the digital era of the 21st century.

The session commenced with the welcome of, Prof. Dr Harpreet Kaur, Principal, Dr Lokesh Kumar Gupta, IQAC Co-ordinator, followed by the esteemed speakers, Dr Gurpreet Singh Tuteja (Associate professor, Department of Mathematics, ZHDC, University of Delhi) and Mr. Alok Bansal (Leading career counsellor and mentor) they were welcomed by Ms. Sonia Aneja, Senior Faculty, Department Of Mathematics and Ms. Mandeep Walia, Teacher-In-Charge, Department Of Mathematics.

The inaugural speech by our Principal, Dr Harpreet Kaur addressed "the need of the hour; skill development". Post which the distinguished speakers gave an intricate web on how clarity and skill development plays an important role in increasing the potential of an individual. Self-introspection and analysis were said to go a long way when developing one-self. They stressed on clarity for long term goals. Details on how skill development courses, internships, volunteering works, help from career counsellors, etc not only adds value to one's profile but also help students analyse and explore their potentials or areas of interests. Following that, a discussion on how masters and/or PhD plays a significant role in future establishment and helps explore the areas of interest took place. Our speaker, Dr Gurpreet Singh Tuteja, also explained how few dilemma's contribute on creating crossroads for students' future opportunities followed by solutions to the same. Adding to this, particulars on how courses based on Mathematica, MATLAB or R can prove to be beneficial for students from mathematics background. For national higher education, Dr G.S Tuteja accentuated on the preparation of exams like CAT, CMAT, XAT, etc.
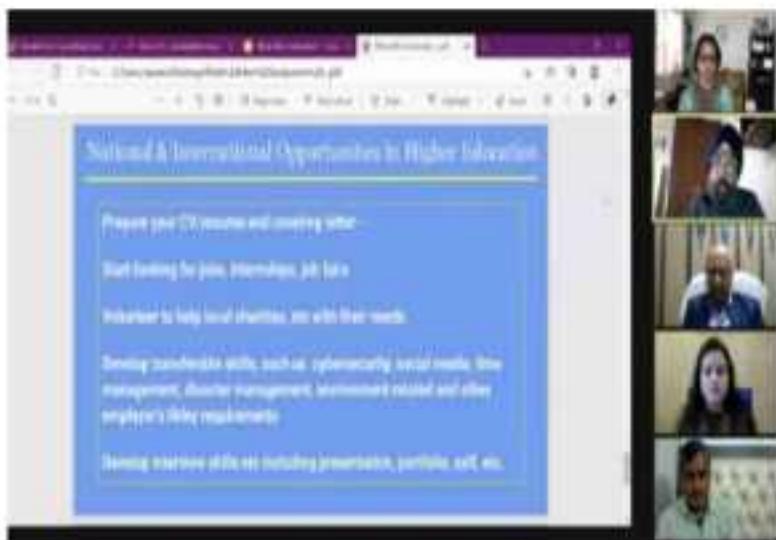
Oursecond speaker, Mr. Alok Bansal also introduced certain necessary and important requirements for international higher education. He actively advocated exams like IELTS, TOEFL, GMAT, GRE, etc. Furthermore, he presented various testimonials which threw light on the myths related to international education. On an ending note he made the audience understand how grades and co-curricular activities collectively bring out the best in students.

The session was concluded by an interactive question/answer round which covered the various inquisitions of participants with satisfactory insights. Marking the end of the talk Dr Rama Verma, Convener, gave the vote of thanks.

Articles

CAFFIENATED

MATHEMATICS

-Rashika Dabas

Earlier I thought to name this article classical mathematics but then I thought why not make the title more energetic for the readers. In fact, you would be surprised to know that researchers at Stevens Institute of Technology in Hoboken, New Jersey found that coffee, or at least the smell of coffee, can boost performance in math. So, let's grab a cup and start!

It's tough for non-experts to see mathematics as beautiful in the first place. Beauty is in the eye of the beholder, sure, but it's also hard to see when the work of art is hidden in darkness, obscured by an impenetrable cloud of symbols and jargon. Trying to appreciate mathematics without understanding its inner workings is like reading a description of Beethoven's Fifth Symphony instead of hearing it. Yet mathematicians have no qualms about earnestly describing their equations and proofs as beautiful. Bertrand Russell expressed his sense of mathematical beauty in these words:
" Mathematics, rightly viewed, possesses not only truth, but supreme beauty—a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, without the gorgeous trappings of painting or music, yet sublimely pure, and capable of a stern perfection such as only the greatest art can show. The true spirit of delight, the exaltation, the sense of being more than Man, which is the touchstone of the highest excellence, is to be found in mathematics as surely as poetry "

Roughly speaking, mathematical beauty can come in one of two forms, generic or exceptional. I would go so far as to say that mathematicians themselves come in these two flavours too.

The first variant is an ethereal form of beauty, reflected in formal structures and patterns. It's a sense of wonder at the inexorable order in which the mathematical world arranges itself. Just think of how perfectly the natural numbers line up in an infinite row or the rigor and precision of formal logic itself. These structures are incredibly powerful and useful and form a certain perspective that can indeed be beautiful.

But for those on the other side of the divide — which, it seems, includes most people and certainly most non-mathematicians — it's tough to get truly excited by the concept of a vector space in n dimensions or a continuous function on the real line. To appreciate these ideas is to appreciate a form of abstraction, and this sense of aesthetics often feels cold and formal. It's the beauty of an ice queen, best admired from a safe distance, never up close.

The second form of mathematical beauty is more relatable. It concerns the exceptions to the rules, the objects that do not fit into any larger category. These are the curiosities, the one-offs, the mathematical incarnations of the enchanting fossils and strange minerals that filled natural history cabinets in the 17th and 18th centuries. This beauty has a very different feel to it: It's exotic, quaint, intimate, and, of course, quite subjective.

Consider, for example, the dodecahedron, a favourite object in many mathematical cabinets of curiosities. It is the regular solid built out of 12 pentagons, and it's one of the five perfectly symmetric solids.
The dodecahedron symbolized all the heavenly bodies — the stars and planets, each perfect in shape and movement but from a modern mathematical perspective, it is still considered exceptional being one of only a handful of symmetric objects that fully stand on their own and are not part of any larger pattern.
It's like it is easy to generalize a cube or a tetrahedron to an analogous object in arbitrary dimensions, but there are no higher-dimensional analogues of the dodecahedron.

Both types of beauty have charmed mathematicians over the years and led to many advances. Abstraction is a powerful tool. It allows one to deal with all members of a family at once, and it places problems in a wider perspective. The mathematician who follows the ice queen often dislikes concrete applications or specific cases. For example, Alexander Grothendieck, one of the high priests of abstract algebra, once famously picked 57 as an example of a prime number but it's not.

Though the real world is very different from the idealized landscape of mathematics and most sciences are tethered to the universe that describes the real world but that's just one out of an infinity of mathematical possibilities. While the other sciences search for the rules that God has chosen for this Universe, we mathematicians search for the rules that even God has to obey. For example, Isaac Newton while explaining the planets' elliptical orbits based on his universal theory of gravity showed how all motions in the heavens were versions of circles, ellipses, hyperbolas, and parabolas. Moreover, the beauty was in Newton's abstract laws, not the specific solutions. Chemists classified all the elements, going beyond the easy bling of silver and gold, and uncovered the periodic table's patterns in the process. Physicists revealed the symmetries of elementary particles hidden within the elements' atoms. Every time, they discovered that the universe's beauty lies in the abstract structures underlying physical phenomena.

OPTIMIZATION PROBLEMS
- AN OUTLOOK

-Dr. Ramita Sahni

plays an essential part in human life. Most real-world problems are concerned with minimizing some quantity so as to optimize some outcome. In order to plan production acturers hunt for maximum proficiency; to yield a good return, financiers create portfolios risk and the traffic planners decide strategies of routing traffic to minimize chaotic congestion etc. In all these situations, optimization problem is of great concern. Finding the "best" answer for procedures of these sorts normally includes developing a mathematical model to portray such issues. Thus, optimization problems are common in numerous disciplines and various domains. The work of the optimization community is being utilized in a variety of areas such as cancer radiotherapy, structural design, revenue management, operations research and so forth. Thus, with the help of optimization problems we find optimal solutions with respect to some goals. The optimal solution is achieved in steps. These steps incorporate perceiving and defining problems, constructing and solving models, and assessing and implementing solutions. Optimization is a powerful tool of Operations Research and is regarded as an important methodology of *conceptualization* and *analysis*. The term optimization is believed to be coined by a German mathematical philosopher Leibniz (1985) in his book *"Essay on goodness of God, the freedom of man and the origin of evil"*.
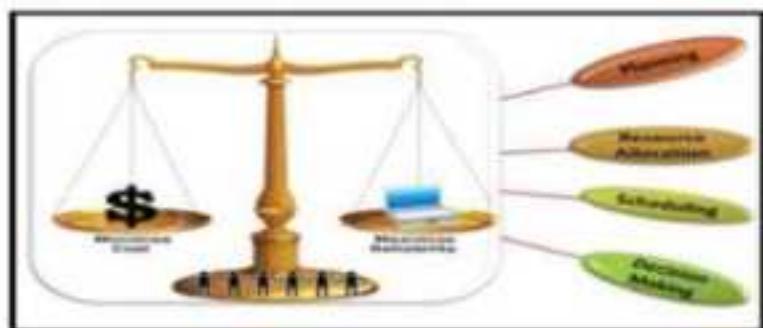
Figure 1: Need of Optimization Techniques

In today's era, several optimization techniques and models are successfully diversified in every industry, engineering systems etc. To obtain meaningful conclusions from these problems, two things are essential, firstly skill in modelling to capture the necessary elements of a problem and secondly good judgment to interpret the results. The theory of optimization includes the quantitative study of optima and methods of finding them. The two important issues in optimization are the *optimal point*; which is the goal and *seeking improvement*; which drives the process towards the optimum solution. In optimization problems, values of the decision variables produce the optimal result. Figure 1 illustrates the need of optimization techniques in this era.

PROPOSED FUNNY PROBLEMS

-Muskan Lakra

that 2 = 1.

quart!

2) A man weighs the following weights on the following dates. How is this possible?
6/1/70 150 lbs.
6/3/70 0 lbs.
6/5/70 25 lbs.
6/7/70 0 lbs.
6/9/70 145 lbs.
Solution:
The man is an astronaut who went to the moon and back.
Outer space weightlessness: 0 lbs. 1/6 of Earth gravity, or gravity of the moon: 25 lbs.

3) If you have a couple of threes and divide them in half, why do you end up with 4 pieces
Solution:
33 cut in half horizontally will make four pieces.

4) How 70 > 3 = LOVE?
Solution:
Move the characters of 70 > 3 around.

5) 10 - 1 = 0
Solution:
If you have a stick (1) and an egg (0) and you give away the stick (1) you still have the egg (0) left.

6) Twelve minus one is equal to two.
Solution:
12 - 1 = 2
(take digit 1 from 12).

7) 7 + 7 = 0.
Solution:
Take the sticks from the 7's and rearrange them to form a rectangular zero
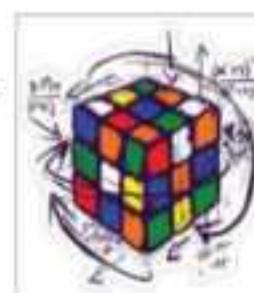
8) An earthworm is cut down the middle. How many halves are there?
Solution:
One, because the other half can still be one whole earthworm.

9) How can you add 3 with 3 and get 8?
Solution:
Turn one of the threes around and put them together to make an 8 (approximately).

10) When algebraically 1=0?
Solution:
In a null ring, which is a set with only one element and one binary operation. If we take for "+" and for
"*" the same operation, we get a commutative unitary ring.
In this case, the unitary element for "*" (which is normally denoted by "1") and the null element, (which
is normally denoted by "0") coincide.

11) Another logic:
How can we have ten divided by two equals to zero?
Solution:
Ten cookies divided by two kids are eaten and nothing remains!

12) You are lost and walking down a road. You want to get to town and know the road leads to town but don't know which direction. You meet two twin boys. You know one boy always tells the truth and one always lies. The boys know the direction to town. You cannot tell the boys apart and can only ask one question to one boy to find the direction to town. What question should you ask?
Solution:
Ask either boy what the other boy would say is the direction to town. This would be a lie because if you were asking the dishonest boy he would tell you a lie. If you were asking the honest boy, he would tell you the truth about what the dishonest boy would say (which would be a lie) so he would give you the wrong direction. Town would then be in the opposite direction.

13) Why are manhole covers round? You know, the manholes on the streets, is there a reason why they made them round or could they be square or triangular?
Solution:
Manhole covers are round because a circle cannot fall inside of itself. If they were square, triangular or some other shape they could be dropped into the hole, which would be dangerous to traffic.

14) You have eleven lines. How can you move five lines and still have nine?
Solution:
|||||||||||
<-
move-->
to form
NINE

SHE CAME, SHE SAW AND SHE CONQUERED

-Bharti Bisht and Sheenu Teotia

Shakuntala Devi, popularly known as a 'human computer', was India's most famous mental calculator. She had the exceptional talent to solve typical calculations in her mind in the span of a few seconds. She amazed millions of people globally through her calculation skills.

Shakuntala Devi was born on November 4, 1929. She was recognized as a child prodigy. At the age of three, her parents noticed her fascination for calculation as she played with cards. When she was five, she could compute cube roots in her mind. After that, she soon began to deliver public performances and appeared on several radio shows as well.

She spent her youth showcasing her calculating abilities in various parts of India. By 1950, she was in Europe. There, on a special show at the BBC, she amazed people by solving mathematical and calendric problems on air.

All this started with calculating cube roots of large numbers, which she could do in her head quickly. Then in 1988, in a test conducted for her abilities, Devi mentally calculated the cube roots of 95,443,993 in 2 seconds, and 204,336 in 5 seconds. Her performance was remarkable.

She once calculated the 7th root of a 27-digit number, 455762531836562695930666032734375, in 40 seconds. This was recorded in a test at Berkeley in 1988. Long multiplication is the skill that got her into the Guinness Book of World Records in 1982.

Other than that, the mathematical genius was very good at calendrical calculations. She could instantly say which day of the week a particular date fell on. Her average response time was about 1 second which is not a usual thing.

Shakuntala Devi was entirely a self-taught child prodigy. She was the daughter of a circus performer. She used to travel with her parents since she was only three years old. It is said that she improved her calculating abilities while performing card tricks. Once she began to calculate cube roots rapidly in her head, she became a performer exploring and exhibiting her skills. She kept catching the attention of people throughout her life. This incredible child prodigy passed away on April 21, 2013.

WAS MATHEMATICS INVENTED OR DISCOVERED?

-Salvi Jain

...are heading towards the 3rd decade of the 21st ...w many of us have encountered or had a ...whether mathematics is invented or ...?

...fore reading this article further, take a pause and then think about it what do you feel about mathematics, is it invented or discovered?

So now I am going to talk about my perspective. According to me, mathematics is an **INVENTED DISCOVERY**, that is, both discovery and invention play a crucial role in mathematics. I posit that together they account for why math works so well. If we eliminate one thing between invention or discovery then I think that it will not fully explain the unreasonable effectiveness of mathematics.

Let's take an example of Pythagoras Theorem, the square of the hypotenuse of a right-angled triangle is equal to the sum of the squares of the other two sides. This is true for all right-angled triangles on a level surface, so it's a discovery. Showing it is true, however, requires the invention of a proof. And over the centuries, mathematicians have devised hundreds of different techniques capable of proving the theorem. In short, maths is both invented and discovered.

One thing that is surprising is that take, for instance, quantum electrodynamics, the mathematical theory developed to describe how light and matter interact. When scientists use it to calculate the magnetic moment of the electron, the theoretical value agrees with the most recent experimental value measured at 1.00115965218073 in the appropriate units in 2008 to within a few parts per trillion. There are even more examples of mathematicians whose observations were found almost identical with the conclusions drawn after many years of study by the scientists. Even more astonishing, perhaps, mathematicians sometimes develop entire fields of study with no application in mind, and yet decades, even centuries, later physicists discover that these very branches make sense of their observations.

As we go back to the history when human beings from our earliest beginnings have searched for solutions to basic problems like building homes, measuring space, and keeping track of seasons. Over 30,000 years ago early Palaeolithic people kept track of passing seasons and changes of weather for planting. To represent the passing of time they carved tally marks on cave walls or slashed tallies on bones warder stone each tally stood for one but the system was awkward when it came to large amounts so symbols were eventually created that stood for a group of objects. And then Palaeolithic people and Babylonians used a nail for ones and a V on its side for tens.

The Ancient Egyptians used objects from their everyday life as symbols for the big numbers. And then Romans created Roman Numerals. Then in Nigeria used cowrie shells as currency and developed amazing complex numbers and it was based on multiplication, addition, and subtraction. The Persians used a method called key boom; a thick cord held horizontally from a huge knotted string. The length and colour of the cord represented one's tens and hundreds. In today's world, almost everyone uses a number system ranging from 0 to 9 but these symbols weren't invented until the 3rd century BC in India. And then eventually it changed the face of mathematics.

WHAT IS MATHEMATICS?

INVENTED   DISCOVERED
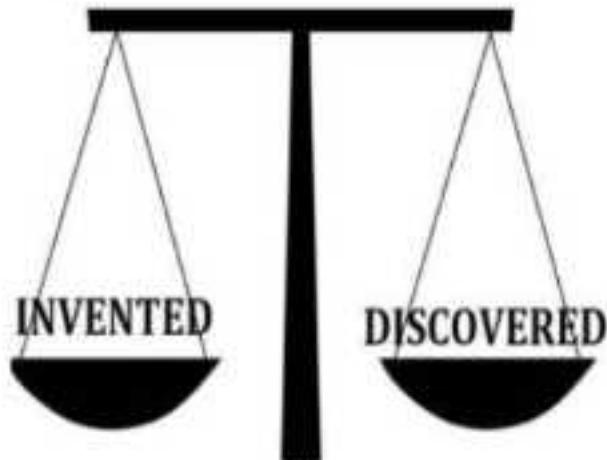
WHEN AM I EVER GOING TO USE MATHEMATICS?

-Tanya Gupta

student of mathematics. So, the questions that everyone asks is that, what is the importance of ...tics, when we are going to use math in our daily life, what is the use of trigonometry that we learned ...h standard and many more questions like these.

The fact is, we all use math in everyday applications whether we're aware of it or not. Mathematics is the universal language of our environment, helping mankind explain and create within it for thousands of years. Without mathematics the world is nothing. Every single moment of our life requires knowledge of math. Math can help us do many things that are important in our everyday lives. Even the math is the base of all other subjects. Yes, mathematics is itself a unique subject. But you would be surprised to know that it forms the base for every subject. The subjects like physics, chemistry, economics, history, accountancy, statistics, in fact; every subject is based upon math. Mathematics is used to perform our daily task such as: - Budgeting- One important skill that we all have learned in our school life is how to calculate interest and compound interest. We can use this skill to manage our money, Cooking - We can use math knowledge when cooking. For example, it is very common to use a half or double of a recipe. In this case, people use proportions and ratios to make correct calculations for each ingredient, Home decorating -Calculating areas is an important skill It is also an important skill for anyone who wants to install new tiles in a bathroom or a kitchen. Knowing how to calculate perimeters can help in deciding how much lumber to buy for floor or ceiling trim. There are many more examples of math connection in daily life such as sports (score, time, strategizing to win), exercising and dieting, driving (distance travelled, shortest route to take to reach a destination), stitching (measurements to stitch a dress) and the list goes on and on.

And yes, even the trigonometry has real life use. It can be used to measure the heights of building and monuments, trigonometry is also used in video games- Have you ever played the game, Mario? When you see him so smoothly glide over the road blocks. He doesn't really jump straight along the Y axis; it is a slightly curved path or a parabolic path that he takes to tackle the obstacles on his way. Trigonometry helps Mario jump over these obstacles. As you know Gaming industry is all about IT and computers and hence Trigonometry is of equal importance for these engineers. So therefore, there is nothing useless in mathematics and there are many more applications of trigonometry in our daily lives. So, next time you say, "I'm not going to study this math subject ever!" remember, this subject will not be going to leave you ever. Math is a tool in our hands to make our life smoother. The more mathematical we are in our approach, the more rational would be our thoughts. It's time to understand the importance of the subject and enjoy the beauty of it. Math is a medium which should be embraced by everyone in all our walks of life.
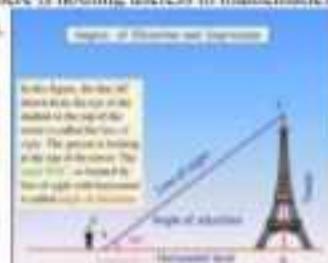
Mathematics- "A DIVINE PERPETUITY"

-Priya Tyagi

*"Scared of numbers, a cardinal sin,
Merely encumbers, hides beauty within.
Appreciate number's divine perpetuity,
Perceiving their secret with math acuity
"*
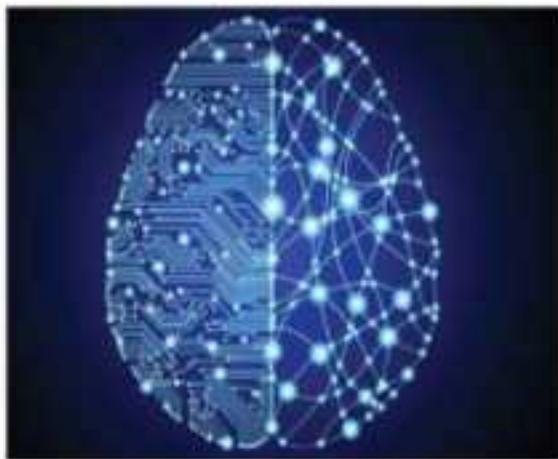
Mathematics is a methodical application of matter. It is so said because the subject makes a man methodical or systematic. Mathematics makes our life orderly and prevents chaos. Certain qualities that are nurtured by mathematics are the power of reasoning, creativity, abstract or spatial thinking, critical thinking, problem-solving ability, and even effective communication skill.

Mathematics is the cradle of all creations, without which the world cannot move an inch. Be it cooking: People use math knowledge when cooking. For example, it is very common to use half or double of a recipe. In this case, people use "PROPORTION and RATIO" to make correct calculations for each ingredient. Recreational Sports use geometry and trigonometry. In-Home Decorating and Remodelling calculating area is an important skill. Farmer, carpenter or a mechanic, a shopkeeper or a doctor, an engineer or a scientist, a musician or a magician, everyone needs mathematics in their day-to-day life. Even insects use mathematics in their everyday life for existence. Example snails make their shells and bees build hexagonal combs. But all don't have good experience with maths

"I practice maths with my heart and soul,
Yet I am not able to achieve my goal.
I never get marks in maths.
I am candid so I confess,

Above lines are the feelings of many students.

So, for making maths easier and enjoyable for such students we should include mathematical activities and games in the curriculum. Maths puzzle and riddle encourage and attract an alert and open-minded attitude among youngsters and help them develop clarity in their thinking. Emphasis should be laid on the development of clear concepts in mathematics in a child, right from the primary classes.

If a teacher fails here, then the child will develop a phobia for the subject as he moves on to the higher classes. For explaining a topic in mathematics, a teacher should take the help of pictures, sketches, diagrams, and models as far as possible. As it is believed that the process of learning is complete if our sense of hearing is accompanied by our sense of sight. The child should be appreciated for every correct attempt. And the mistakes must be immediately corrected without any criticism.

The greatest hurdle in the process of learning mathematics is a lack of practice. So, students should do maths regularly. And should not be afraid of it. The more mathematical we are in our approach more successful we will be. Mathematics offers rationality to our thoughts. It is a tool in our hands to make our life simpler and easier. Let us realize and appreciate the beauty of the subject and embrace it with all our heart. It is a talent that should be compulsorily honed by all in every walk of life.

At last, I will end up with few lines

Math can inspire.
Math can inquire.
Math does not require those who know,
But those who understand.
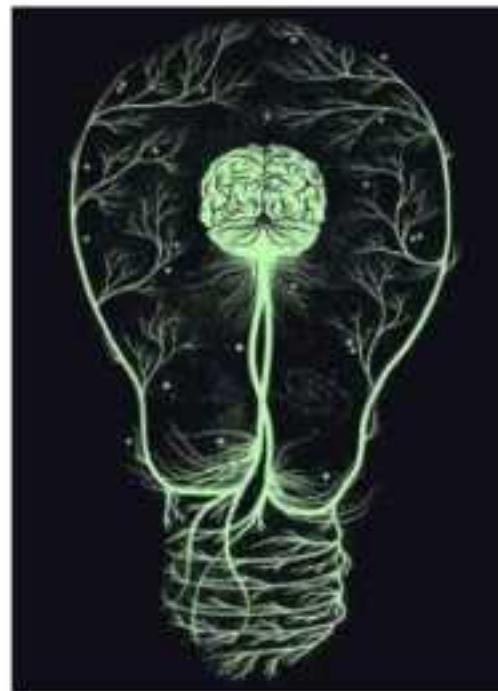
MATHEMATICAL BEAUTY

~Jasminder Kaur

...ical beauty is the aesthetic pleasure typically derived from the abstractness, purity, depth or orderliness of mathematics. Mathematicians often express this pleasure ...ribing mathematics (or, at least, some aspect of mathematics) as beautiful. They might also describe mathematics as an art form or, at a minimum, as a creative activity. Comparisons are often made with music and poetry.

Beauty of Mathematics in Numbers
1 X 8 + 1 = 9
12 X 8 + 2 = 98
123 X 8 + 3 = 987
1234 X 8 + 4 = 9876
12345 X 8 + 5 = 98765
123456 X 8 + 6 = 987654
1234567 X 8 + 7 = 9876543
12345678 X 8 + 8 = 98765432
123456789 X 8 + 9 = 987654321

Mathematics is everywhere. It is in the objects we create; in the works of art, we admire. Although we may not notice it, mathematics is also present in the nature that surrounds us, in its landscapes and species of plants and animals, including the human species. Our attraction to other humans and even our mobility depends on it.

From the structure of buildings to the discovery of new planets, from trade to fashion and new technologies, mathematics has always served as an important tool in the advancement of science and technology, in fields as diverse as Engineering, Biology, Philosophy and Arts. And it is also present in nature, concealing- and revealing- its charms in various forms, intriguing researchers and inspiring poets. One of the ideas that best embodies mathematics in all its elegance is the concept of *symmetry*.

Mathematics reveals its secrets only to those who approaches it with Pure love, for its own Beauty.

"MATHEMATICS, A SCIENCE OF ALL SCIENCES"

-Khushbu Singh

...atics can be termed as the science of all ...and art of all arts.

...agree with the fact that mathematics is ...just something related to numbers and figures, it is also something that we have been using in all the science related fields including natural science, engineering, medicine, finance, and the social sciences. We just cannot do physics and chemistry without calculus (Schrodinger equation) and statistics (Boltzmann distribution), biology without statistics (neurosciences, DNA computing), electronics without complex numbers. Mathematics is a useful tool to simplify science by quantification of phenomena. In fact, science without mathematics can go no further than a humorous oxymoron.
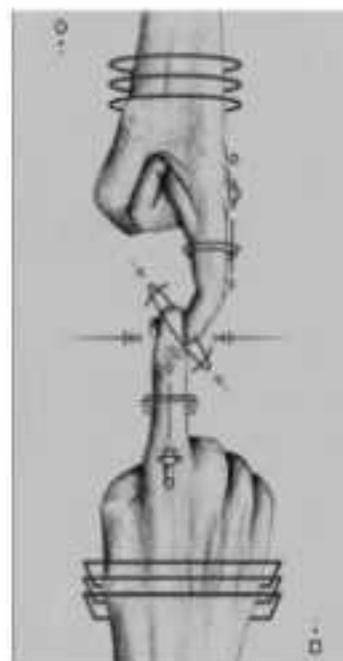
Mathematics is certainly the "foundation" of all scientific thinking for sure! Statistics will help you take a look. Any specific condition / problem variation/any theory or thought in any science - life sciences, geography, astrophysics, physical science can be proved or disproved by "quantitative " methods and when we make a statement, unscientific, the first thought that comes to mind is "how can u prove it ", and proof is "evidence based" in other words, it is given by numbers and that is mathematics is all about! Mathematics is not just used in proving theories but it also gives ideas on how to create them.

Also, mentioning its importance in fields other than sciences, math is a language of the universe. Various kinds of scientific patterns, rules and regulation are defined by mathematical formulas. Thus, Mathematics gives the scientist the power to calculate. Mathematics gives the scientist the power to predict - unfounded statistics. Mathematics suggests scientific research methods, suggests avenues of investigation and hence forms the basis of all sciences

MATHS TIMES
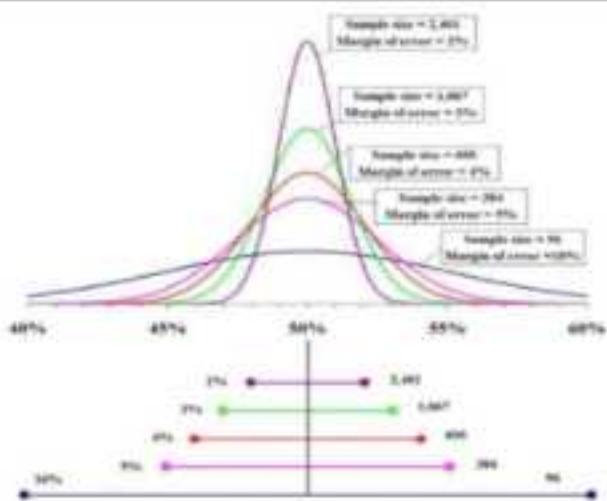
What is a margin of error? This statistical tool can help you understand vaccine trials and political polling

In the last year, statistics have been unusually important in the news. How accurate is the COVID-19 test you or others are using? How do researchers know the effectiveness of new therapeutics for COVID-19 patients? How can television network predict the result of elections long before all the ballots have been counted?

Each of these questions involves some uncertainty, but it is still possible to make accurate predictions as long as that uncertainty is understood. One tool statisticians use to quantify uncertainty is called the margin of error.

1

National Mathematics Day 2020: Remembering mathematician Srinivasa Ramanujan on his 133rd birthday

2

Divide and Conquer: A New Formula to Minimise Mathematics Anxiety.

3

Mathematical Modelling Can Help Balance Economy, Health During Pandemic

Mathematician suggests new approach to cooperative game

A mathematician from RUDN University developed a matrix representation of set functions. This approach is vivid and easy to check, and it makes the calculations easier. Among other things, the new development can be applied to cooperative game theory. The results of the work were

Combinations of elements called coalitions can assume their own values. To work with this apparatus, scientists require an intuitive mathematical language. A mathematician from RUDN University suggested his approach to it.

Study: Students falling behind in math during pandemic

A disproportionately large number of poor and minority students were not in schools for assessments this fall, complicating efforts to measure the pandemic's effects on some of the most vulnerable students, a not-for-profit company that administers standardized testing said Tuesday.

Overall, NWEA's fall assessments showed

Cooperative games   Matrix representation
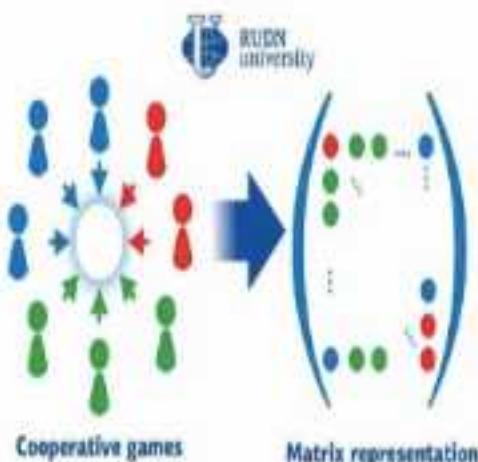
published in the Information Sciences journal. Specialists in cooperative game theory study methods of complex decision-making in situations with multiple criteria. In such a situation, groups (or coalitions) of players have to come up with a decision that is the most profitable for all of them. Set functions are one of the tools used to work with cooperative game theory. In these functions,

the input data are sets of elements that can have different values. Simple explicit questions are quite rare in real life; therefore, the data on different elements can support or neutralize each other.

elementary and middle school students have fallen measurably behind in math, while most appear to be progressing at a normal pace in reading since schools were forced to abruptly close in March and pickup online.The analysis of data from

nearly 4.4 million U.S. students in grades 3-8 represents one of the first significant measures of the pandemic's impacts on learning.

'Fairmandering' draws fair districts using data science

It's almost impossible for humans to draw unbiased maps, even when they're trying. A new mathematical method developed by Cornell researchers can inject fairness into the fraught process of political redistricting —and proves that it takes more than good intent to create a fair and representative district.The two-step method, described in the paper,

Study uses mathematical modelling to identify an optimal school return approach

In a recent study, NYU Abu Dhabi Professor of Practice in Mathematics Alberto Gandolfi has developed a mathematical model to identify the number of days students could attend school to allow them a better learning experience while mitigating infections of COVID-19.

Published in *Physica D* journal, the study shows that blended models, with almost periodic alternations of in-class and remote teaching days or weeks, would be ideal. In a prototypical example, the optimal strategy results in the school opening 90 days out of 200, with the number of COVID-19 cases among the individuals related to the school increasing by about 66 percent, instead of the almost 250 percent increase, which is predicted should schools fully reopen.

'Fairmandering: A Column Generation Heuristic for Fairness Optimized Political Districting,' first creates billions of potential electoral maps for each state, and then algorithmically identifies a range of possibilities meeting the desired criteria for fairness.

Poetry

Mathematics

Maths is about glee

Tension is going to flee.

Adding is always a fun

As bright as a sun.

Subtracting depression is great

It provides a wonderful fate.

Happiness is going to multiply

No one is going to defy.

Obstacles will divide

- Jyoti

Mathematics is full of fun

With so much to learn.

Profits are added

While losses are subtracted

Degrees are multiplied

And percentage is divided

Geometry is full of mystery

Algebra has a big history

Integers as different as brothers

Lines are parallel

Angles are similar

Maths is necessary in life

- Anumeet Kaur

Maths?

What is that?

Is it a name?

And does it have fame?

Well, Math may be something we find lame!

As a fact, it is a name!

Name of numbers and signs,

Surprisingly! It also has curves and lines;

there are rarely words,

and if there are,

It usually makes Maths even worse

But, without maths

people would still believe that the Earth is flat;

Maths was created by great minds,

and also manipulated,

and it started from numbers to lines,

amazingly! it created science,

and now the world is fine,

- Jasnoor Kaur Chhabra

कहती हैं खामोशियाँ, सन्नाटे अब चुभते हैं
कहाँ हैं धागे सारे जो सुनहरा कल बुनते हैं
क्यूँ सब रुका सा है, कोई किसी सराहता नहीं
चल पड़ी दुनिया किसी अजीब राह पर
जहाँ कोई किसी से मिलता नहीं, आता जाता नहीं
बक्सों की गिनती में कैद ये जिन्दगी
कहीं ठहर नहीं सकती
बस इसलिए
तू से किसी स्क्रीन पर किसी छब्बे में
कोई बोलता रहता है
कोई सुनता भी है या नहीं
समझता भी है या नहीं
क्या महज अक्षर और ज्ञान
हर रोज थोड़ा से किसी के जहन को छूता है
रिश्तों की डोरियाँ काट दें
तो आखिर में क्या कहीं कुछ बचता है
बेपरवाह
यादें नहीं बनती हैं
खुशियाँ नहीं मनती हैं
परेशानियाँ नहीं दिखती हैं
कलयुग की इस कलमुही शिक्षा का
कोई विकल्प नहीं दिखता
मगर अफसोस
मशीनों से अहसास नहीं जुड़ते हैं
कहती हैं खामोशियाँ, सन्नाटे अब चुभते हैं
कहाँ हैं धागे सारे जो सुनहरा कल बुनते हैं

-Dr. Rashmi Verma

Activity
Corner

The Unexpected Examination Paradox- No Surprise Exams!

-Dr. Ramita Sahni

Think About It

A mathematical paradox is any statement (or a set of statements) that seems to contradict itself (or each other) while simultaneously seeming completely logical. Paradox (at least mathematical paradox) is only a wrong statement that seems right because of lack of essential logic or information or application of logic to a situation where it is not applicable. There are many paradoxes in mathematics.

A teacher tells the class that on one weekday of the following week she will give a surprise exam. Why can't she give a surprise exam? This paradox, also known as the prediction paradox of the unexpected hanging paradox, has its origin in an episode during the Second World War.

The Swedish Broadcasting Service announced that a civil defence exercise would take place one day the following week. To ensure that all civil defence units were properly prepared, no one would know in advance what day this exercise would take place. Lennart Ekbom, a professor of mathematics at Ostermalms College in Stockholm, immediately realised that the announcement involved a logical paradox and discussed it with his students.

The paradox first appeared in print in 1948 in an article by the British philosopher D. J. O'Connor in the journal Mind (vol. LVII, pp.358-9). Over the years the paradox generated zillions of articles in respected journals without producing anything resembling a consensus as to the right solution.

Let's find out why. The surprise exam cannot be held on Friday, because on Thursday evening everyone will expect it to be held the following day as they hadn't had the exam during the week. An exam on Friday is not a surprise exam. Because students know that the exam cannot be held on Friday, it would have to be held on Thursday. But it cannot be held on Thursday, because by Wednesday evening students will know that the exam will be held either on Thursday or Friday. Again, there is no surprise. If we continue with this reasoning Wednesday, Tuesday and Monday are also out. So the teacher cannot give surprise exam.

Of course, she can give a surprise exam.

20 Cool Facts About Maths...

If you were to play a word association game with a school aged child, you'd be pretty unlikely to get a response of "cool" when you asked them what word first came into their mind when you said "MATHS". Despite what some people may tell you, MATH is far from dull. On the contrary, there are plenty of fun and strange maths - related facts that will fascinate all of us (AGE DOESN'T MATTER). To prove this, we have compiled a list of 20 cool facts about maths which we encourage you to share with your knowns.

1. The word "hundred" comes from the old Norse term, "HUNDRATH" which actually means 120 and not 100.

2. THE SQUARE ROOT OF TWO is called "PYTHAGORAS CONSTANT".

3. The number "pi (π)" is "IRRATIONAL".

4. In a room of 23 people there's a 50% chance that the two people have the same birthday.

5. Most mathematical symbols weren't invented until the 16th century. Before that equations were written in words.

6. "FORTY" is the only number which is spelt with letters arranged in alphabetical order.

7. Conversely, "ONE" is the only number that is spelt with letters arranged in descending order.

8. From "0 TO 1000" the only number that has the letter "a" in it is "ONE THOUSAND"

9. "FOUR" is the only number in the English language that is spelt with the same number of letters as the number itself.

10. Every odd number has an "e" in it.

11. "ELEVEN PLUS TWO" is an anagram of "twelve plus one" which is pretty fitting as the answer to both equations is 13.

12. Also, there are 13 letters in both "eleven plus two" and "twelve plus one".

13. "ZERO" is not represented in Roman numerals.

14. "2 AND 5" are the only prime numbers that end in "2 AND 5".

15. A "JIFFY" is an actual unit of time. It means "1/100TH OF A SECOND".

16. The symbol for division (i.e.   ) is called an "OBELUS".

17. If you shuffle a deck of cards properly, its more than likely that the exact order of the cards you get has never been seen before the whole history of the universe.

18. In France, a "PIE CHART" is sometimes referred as "CAMEMBERT".

19. The number on opposite side of a dice always "ADD UP TO SEVEN".

20. The "FIBONACCI SEQUENCE" appears in nature.

Activity

–Jasnoor Kaur Chhabra
and Hitika Narang

This is a crossword puzzle without words.... Numbers are the answers instead (a single digit for each square in the grid.) Unlike a crossword puzzle, deductive logic based on a knowledge of Math is needed to work out the answers from information provided in the clues. A little trial and error solving may also be necessary. (Bold black lines in the puzzle grid separate entries in the same way as the black squares.) Additional clue :- there are no zeros in the completed grid.

ACROSS

1 The first two digits are prime numbers; the second two are the next lower prime number.

5 A perfect cube.

6 A multiple of cube root of 4 Down; sum of digits is 6,

8 The sum of first two digits equals the sum of last two digits equals the middle digit.

9 A perfect cube.

11 The square of cube root of 4 Down.

12 The product of 10 Down times 6 Across
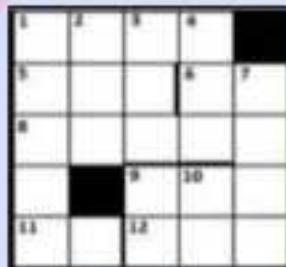
DOWN

1 A number in which each digit is lower than the preceding digit.

2 The sum of digits is two third the product of digits.

3 The product of three primes; the first 10 larger than the second.   The second 10 larger than the third

4 A perfect cube.

7 All even digits ; each different

9 A perfect cube.

10 A prime number.

A Mathematical Letter

-Suhani Sharma

Mr. Algebra
Binomial Villa
Divergent Street
Maths Nagar

Dear Mr. Algebra

With due calculations, I am asking your opinion about the marriage of my daughter infinity to your son zero. As everybody knows, my daughter infinity does not have any limits. How nice they would look as a couple and may I inform you that they are already in love. Their relation is a universally known fact.

Your son is a promising lad. He is a person of will power. By addition, subtraction, multiplication, he remains intact. Mr Statistics and Mr. Dynamics approve their correlation. Mr. Vector says they will result in good matrix. So please, May I request YouTube consult your formulae and log tables to find a suitable day for the wedding. Also, please consult all your family members including your grandfather Mr. Solid Geometry.

My daughter has already thought the name of their child which is same as your son because when both infinity and zero will multiply , it gives zero. Now, anyway!

Thank you for your co-relation and looking forward to a happy coordination.

Yours correctly,

Mrs. Trigonometry
Calculus Street
Mechanic Row
Maths Nagar

Comic Strips

-Hitika Narang
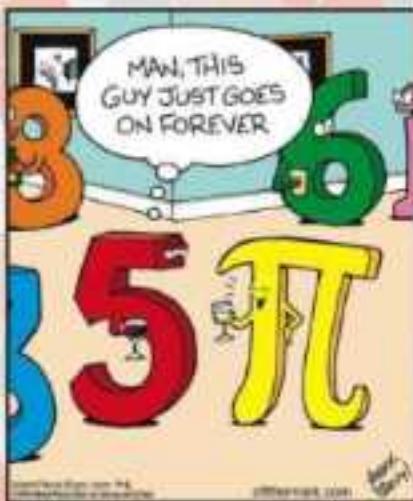
Isaac Newton
One like and I'll steal calculus from Leibniz.
Like · Comment · October 24, 1665

👍 Isaac Newton likes this.

Isaac Newton Say no more
October 24, 1665 · Like

So what do you do besides
solving differential equations

And don't say **vector calculus**

Or memorizing common
Taylor expansions

For every positive
epsilon...

How do you keep
warm in a cold room?

You go to the corner,
because it's always
90 degrees.

Photo Gallery

Batch Of 2018-2021

Aarushi Chanda

Believe in yourself; have faith in your abilities. Without a humble but reasonable confidence in your powers you cannot be successful or happy.

Amrit Kaur

Education is the key to success and leads to better future.

Amritpal Kaur

This is the time for smart paybacks and big memories.

Anchal Chauhan

I live my life like an open book, though it is open on the wrong page.

Anjali Sharma

College life is not only about being graduate but it's about exploring ourselves, doing things that scares us and learning new things that define a person.

Anjali Shukla

Do you miss your college - my friend asked. No, but I miss my people - I replied.

Ashreen Kaur

Sometimes life is bad and there is no hot chocolate. But remember, 'you are the leader of your own life. YOU CAN DO IT. YOU GOT THIS'.

Arushi

Today is not just another day. It's a new opportunity another chance a new beginning. Make it a good one !

Bharti Bisht

College inspired me to think differently. It's like no other time in your life.

Gaganpreet Kaur

Push yourself, because no one else is going to do it for you.

Gurjeet Dhillon

If you're going to tell people the truth, be funny or they'll kill you.

Himani Rajput

A BEST FRIEND is that who can make you laugh even when you tell no secret smiling again

Hitika Narang

I love chess. Forces a person to be even more smarter.

Ishika Gupta

Mata Sundri College gave me more than I expected. There are only inspirations and happy moments to look back to.

Ishika

Life matters so don't let anyone to make decision of your life.

Jasmeet Kaur

Dream it. Wish it. Do it.

Jasinder Kaur

A short journey of life which ended having a great experience and lifetime friends like Gar.

Jyoti Bisht

College life is that part of your life that you are going to relive as your memories till you breathe.

Muskan Lakra

"Believe in love. Believe in magic. Hell believe in Santa Claus. Believe in others. Believe in yourself. Believe in your dreams. If you don't, who will?"
- Jon Bon Jovi

Namrata Singh

The Only Way To Do Great Work Is To Love What You Do. If You Haven't Found It Yet, Keep Looking. Don't Settle.

Nishi Gupta

"Goodbyes are not meant to be forever. This simply means I miss you. I don't know what else there is to say" !!

Nishita Vaid

College life will soon end but the friends and the memories will last forever.

Pooja Singh

A mind is a fire to be kindled, not a vessel to be filled.

Prabhjot Kaur

She is the BEACON of a different path. A LIGHTHOUSE for anyone searching answers.

Pragati Gautam

Be adventurous, make for these three years and make the best use of them.

Pragya Agarwal

An investment in knowledge pays the best interest.

Pratibha Chauhan

Live your life as relations you possess today, if you do not have I tomorrow you will not be distressed or broken from within.

Preeti Sajwan

Priya

Priyesha Ranjan

Laughing makes everything easier, funnier and happier especially when you do it with your best friend.

No one is YOU and that is your SUPER POWER

No one is perfect...so believe in yourself, be confident, hopeful, optimistic, winning doesn't mean always being first. We're trying to learn, enjoy and try to win for yourself.

Rashi Mathur

Rashika Dabas

Riya Jain

Slow class have pride, and display smiles. If you do, winning takes care of itself.

Beginnings are tough and endings are sad so just enjoy the process and take a chill pill.

I made lots of sweet memories and very caring friends in this college. I'll always remember every time spent here. The memories of batch 2018-19 will always be in my heart.

Riya Sharma

Sakshi Jaiswal

Sheenu Jivtia

Sheetal

Completing assignment a night before last submission date is the USP of college life.

Take a limitation and turn it into an opportunity. Take an opportunity and turn it into an adventure by dreaming big.

At any point in our life, we have the power to change the direction of our life. It all starts from our own thoughts, beliefs and notions.

College life helps us to become families with the world. It gives us a new journey.

Mata Sundri College For Women
(University Of Delhi)
Mata Sundri Lane , New Delhi - 110002

matasundricollege.du@gmail.com
Phone:23237291