

# CONVERGENCE



The Official Newsletter of Mathematics Department of Maitreyi College



Credits: Shivangi Pandit (3rd year)

## Vedic Mathematics: Math or Magic?

*"Mathematics is not just a subject to be studied, but a means of awakening the infinite potential of the human mind"*

-Swami Bharati Krishna Tirthaji Maharaja

Vedic Mathematics is a mathematical system with its origins in ancient India that draws its principles from the Vedas, the sacred Hindu scriptures written in Sanskrit. The system relies on 16 sutras and 13 sub-sutras that offer straightforward and easy-to-remember formulas to solve intricate mathematical problems. Jagadguru Shankaracharya Swami Bharati Krishna Tirthaji Maharaja of the Govardhana Matha in Puri, a Hindu spiritual leader and scholar, is credited with discovering these sutras. The Sutras are applicable and comprehensive, encompassing every aspect of mathematics, including arithmetic, algebra, geometry, trigonometry, conics, astronomy, calculus and more. In essence, no area of mathematics, either pure or applied, falls outside their domain.

When dealing with complicated problems that entail numerous mathematical operations, the Vedic method takes significantly less time than contemporary western approaches. The study of Vedic maths, therefore, enhances computational proficiency and cognitive abilities making it a valuable resource for individuals seeking to enhance their mathematical abilities.

The world, however, as yet knows very little of the ancient Indian methods, much less of its secret techniques. The book entitled "Vedic Mathematics" written by Swamiji in the early 20th century and published first in 1965, is considered a seminal work on the subject. This book comprises a diverse range of illustrations and problems that assist readers in implementing the Vedic Mathematics principles in real-life scenarios. Let's have some glimpses of the same.

$87265 \times 32117 = 2802690005$  (One line mental multiplication can be achieved using Urdhwa Tiryak Sutra.)

$1/19 = 0.052631578947368421$  (One can express  $1/19$  in its full recurring decimal shape (18 digits) in one line using Ekadhika Purva Sutra)

If you are wondering "Is this mathematics or magic"? The answer is "It is both. It is magic until you understand it and it is mathematics thereafter".

(Author's Note: Myself **Dr. Neelima Ohri**, Assistant Professor, Department of Mathematics, Maitreyi College. I would add here that under UGCF-2022, Vedic Mathematics-I was designated as a Value Addition Course (VAC). Currently, Vedic Mathematics-II has also been included in the VAC course offerings. Teaching both of these papers has sparked my interest in the subject. )

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Ramanujan Prize Winner

# Prof. Neena Gupta

Prof. Neena Gupta is the fourth Indian and third woman mathematician in the world to receive the prestigious Ramanujan award. She is one of the youngest and renowned mathematicians whose work got appreciated by everyone. She is a professor at the Statistical and Mathematics Unit (SMU), ISI Kolkata, and INSPIRE Faculty at ISI Kolkata. She was previously a visiting scientist at the ISI and a visiting fellow at the Tata Institute of Fundamental Research (TIFR).

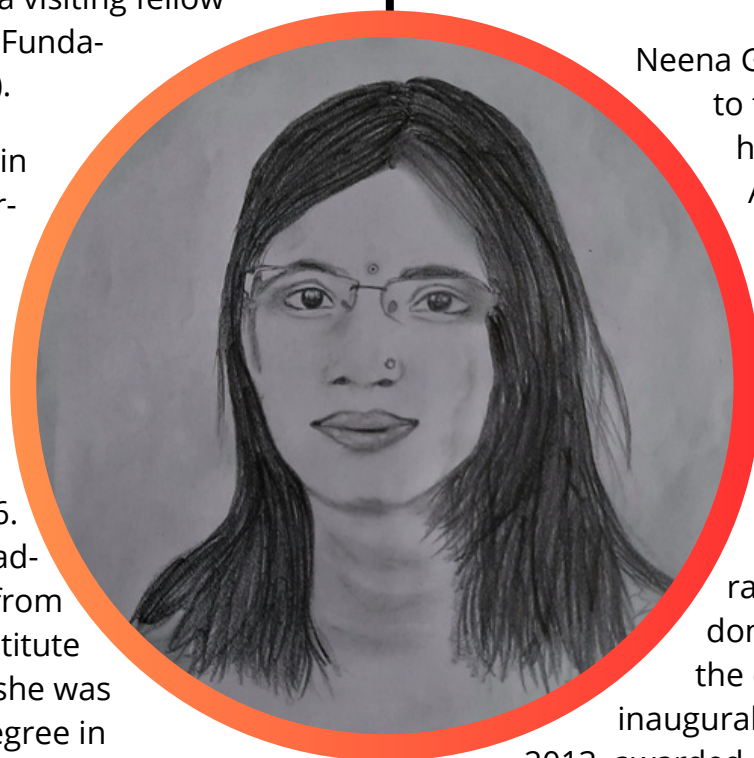
Neena Gupta was born in the year 1984 in an average Indian family in Kolkata. She completed her schooling at Khalsa High School, Dunlop & graduated with honors in mathematics from Bethune College in 2006. She earned her post-graduation in mathematics from the Indian Statistical Institute in 2008. Subsequently, she was awarded a doctorate degree in Commutative Algebra as her specialization under the guidance of Amartya Kumar Dutta in the year 2011.

## The Zariski Cancellation Problem:

The Zariski cancellation problem is a fundamental problem in Algebraic Geometry. The 73-year-old mathematics puzzle has intrigued mathematicians around the globe ever since a version of it was proposed. Given by Russian-American mathematician Oscar Zariski in 1949, the

Zariski Cancellation Problem has a total of eight problems, out of which Neena Gupta has solved one.

To explain it in Gupta's own words: "The cancellation problem asks that if you have cylinders over two geometric structures, and that have similar forms, can one conclude that the original base structures have similar forms?"



Neena Gupta provided the solution to this problem, which earned her the 2014 Young Scientist Award of the Indian National Academy and the Ramanujan Prize for the Young Mathematicians from Developing Countries in 2022. The Indian National Science Academy described her solution as "One of the best works in algebraic geometry in recent years done anywhere". Her work on the conjecture also earned her

inaugural Saraswati Cowsik Medal in 2013, awarded by the TIFR Alumni Association. She also won the Shanti Swarup Bhatnagar Prize for Science and Technology (2019) in the category of mathematical sciences, the highest honor in India in the field of science and technology.

## Inspiring words of Dr. Neena Gupta:

*"Mathematics is not difficult. Unlike other subjects one can't memorize and no one can spoon-feed. If your concept is clear then, even you can solve the problems. Practice is the key."*

### Credits:

Article: Nisha Choudhary (2nd year)

Portrait: Kanika Singh (3rd year)

# DEPARTMENTAL

## NEWS



### TALK ON "HOW TO START A START-UP?"

A very engaging and informative talk session was organized by the Department of Mathematics on the topic 'How to start a Start-Up' on 9th September, 2022.

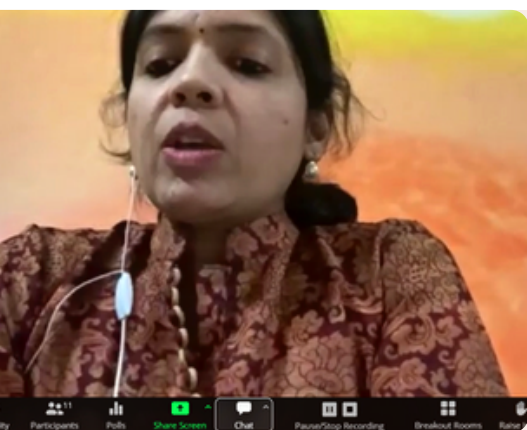
Mr. Kamal Chhabra, Founder & CEO of KC GlobEd, an Ed-tech company, was invited as the guest speaker for the day. It was attended by the undergraduate students of Maitreyi college from various departments.

Session started with a brief introduction of the speaker then Mr. Kamal Chhabra discussed every facet of a start-up. He covered a variety of subjects, including business ideas, idea valuation, product development, business models, tech development, third-party service integration, marketing & branding, digital marketing, statutory requirements, and scaling your business. This event helped the students gain insightful knowledge on how to start a start-up. The session was extremely well received by all of the students. Overall, it was a fruitful session.

### NATIONAL SEMINAR BY IIVA

On September 15, 2022, a national seminar on "Entrepreneurship Development Program and creating awareness on Vedic Maths" was organized by the Department of Mathematics. The seminar was held in hybrid mode in Maitreyi College's New Seminar Hall at 11am and streamed online via Gmeet platform. The department got an overwhelming response of 179 registrations, including 105 offline and 20 online.

The Speaker of the Webinar, Kanika Chawla is a Training Head at IIVA (Vedic Maths and Abacus). It started with a brief introduction about the speaker. Post this, Ms. Kanika Chawla kicked off the seminar by talking about topics like Vedic Maths, its advantages, the sutras, explained multiplication of 11 and 111, squares, multiplication by no. 9s, and algebraic division. A Q&A round and vote of thanks marked the webinar's conclusion. The session was well-received by all of the students



### PAPER PRESENTATION COMPETITION

The Department of Mathematics, Maitreyi College conducted a Paper Presentation Competition on 21st November 2022 at 4:00 pm on the topic "Interdisciplinary Nature of Mathematics" in Online Mode via Zoom platform. Nine teams from various colleges participated. The judges were Dr. Pawan Kumar and Mrs. Nikita Mittal. Each of the six teams had to present in the time limit of 10 minutes including queries from judges. Students who are engaged in research were able to present their work through this competition.

### ONLINE RANGOLI MAKING COMPETITION

On October 24th, 2022, the Mathematics department organised an Online Mathematical Rangoli Making competition. The top three submissions were shared on Gradient's Instagram page, and the winner was chosen based on how many likes each rangoli received. Anuradha from B.Sc.(H) Mathematics, 3rd year, Maitreyi College secured the first position with 217 likes. Second position was secured by Anjali from B.A. Prog, 3rd year, Maitreyi College with 67 likes and third position by Devanshi Jain of PG Diploma in Computer application, 1st year, Indira Gandhi National Open University with 51 likes





## NATIONAL MATHEMATICS DAY CELEBRATION

The Department of Mathematics of Maitreyi college celebrated Srinivasa Ramanujan's 135th birth anniversary on National Mathematics Day, December 22, 2022. The department organized various events throughout the day. The inaugural session featured a presentation on Ramanujan's life and work, followed by an academic session on "Fixed Point Theory and its Applications" by Dr. Izhar Uddin. The Ramanujan Quiz competition and an Online Poster Making competition were held in the afternoon. The quiz consisted of two rounds, and the poster competition's theme was "Who is Ramanujan?," and the top two winners of both the competitions were awarded cash prizes. The event aimed to educate students about Ramanujan and the significance of National Mathematics Day. Overall, the event was a success, with a large turnout and active participation from students.

## TRIP TO BHARAT DARSHAN PARK

The Department of Mathematics organized an educational trip on 20th January 2023 to Bharat Darshan Park, Punjabi Bagh West. The park has replicas of several Indian monuments made of waste material, with brief descriptions written beside each memorial to educate visitors about their historical significance and making. The students and teachers were captivated by the beauty of the park, and took the opportunity to take photographs and make memories with each other. The trip was an opportunity to interact with not only classmates, but also students of different years and teachers. An informal student - teacher interactive session was held before leaving the park and a group photograph was clicked.

Overall, the trip was a memorable experience for all the students and teachers involved, providing them with an opportunity to learn, interact and make lasting memories.



## MOVIE MATHON – THE HIDDEN FIGURES

The Mathematics Society of Maitreyi college organized a two-day event consisting of a screening of the movie "Hidden Figures" on 24th January, 2023 and a MovieMathon on January 25th, 2023. A total of 58 students attended the movie screening on January 24th, and 13 students participated in the MovieMathon on January 25th.

The movie was shown at 2:30 p.m. in the Video Conferencing Hall. All the students and faculty members were present, and it lasted for 2 hours. The event was a success, and all the students enjoyed the movie. A quiz based on the movie was a follow up event. The winners were also awarded with cash prizes. The first and second position holder of the MovieMathon were awarded with a cash prize of 1000/- and 500/- respectively.

## AVGAAHAN

Avgaaahan is the annual Interdisciplinary Academic fest organized by Maitreyi college during the months January - February. It aims to provide participants with the opportunity to immerse into and investigate various disciplines through innovative and intellectually stimulating activities. It is a unique attempt undertaken by all departments of Maitreyi college to bridge the distance between various disciplines using 'technology'. It is open to all national and international undergraduate students which provide them a chance to win attractive cash prizes. The mathematics department conducted the Math-O-Logic quiz, witnessing a participation of around 400 students across the nation. Students were then shortlisted for the final round depending on the scores from the preliminary round.. The final round was Paper Presentation on "Archaeometry- Role of Mathematics in Archeology". Top 3 winner were awarded with a cash price of 3000/-, 2000/- and 1000/- respectively.



## SHORT TERM COURSE BY THE DEPARTMENT OF MATHEMATICS

Gradient: The Mathematics Society of Mathematics, under the aegis of Short Term Courses Committee is organized a 3-week Short Term Course on 'Building Mathematical Skills: Logic, Reasoning and Aptitude'. The course took place from 20th March - 8th April 2023. The department got an overwhelming response through 100 registrations for the course.

The aim of this course was to build a strong foundation of mathematical skills of logic, reasoning, and aptitude among undergraduate students across various disciplines. It was designed to equip learners with numerous mathematical techniques needed for solving quantitative aptitude and logical, reasoning-based questions which form an integral part of various competitive examinations.

This course helped students to apply logical reasoning to solve problems in their own areas of study and get an edge ahead in several competitive exams and placements in many MNCs where Logic, Reasoning & Aptitude is required.



## FAREWELL '23

The day was mellow but the air was rich with an emotional wave as the 1st and 2nd year students bid farewell to their beloved seniors, batch of 2020-2023, on 27th of April, 2023. The juniors showed their affection by presenting stunning dance performances and some melancholy songs. To make the event more captivating, Miss Farewell contest was organized, in which 32 final year students took part. The contestants went through three rounds of the contest judged by Dr. Khushboo Bussi and Dr. Shivani Yadav. The Miss Farewell title was won by Kanika Singh, while the Miss Well-Dressed and Miss Show Stopper titles were awarded to Aadya Khullar and Kiran Kumari respectively. The students also prepared a slide show embracing the beautiful memories of the batch with each other. A cake-cutting ceremony was organized as a gesture of love followed by speech of hon'ble Principal Prof. Haritma Chopra. She gave words of wisdom to final year students and ask them to learn, rise and evolve throughout their lives. She wished them the best of luck for their future endeavors and ask them to carry 'never to give up attitude' for whatever the challenges life throws on them. The air was filled with nostalgia and gratitude as students shared some beloved memories and a heartwarming goodbye from the seniors.

## OUR ACHIEVERS

CLEARED  
IIT - JAM



**Kiran Kumari**  
AIR - 225



**Manju**  
AIR - 2670



**Anushka Bhakt**  
AIR - 3093

PLACEMENTS



**Neha Nautiyal**  
Placed at Planify Capital



**Hiya Srivastava**  
Placed at PWC

# ABSCISSA



**Gradient** - The Mathematics Society of Maitreyi College, University of Delhi, held its annual Departmental Fest, **ABSCISSA'23** on February 14th, 2023.

The event began with the lighting of the lamp and Ganesh Vandana, followed by a semi-classical dance performance. Professor Rashmi Bharadwaj gave the **inaugural talk** on "Real-Life Applications of Mathematics". The amphitheater was set up by participants who were all geared up for the **Open Mic competition**. This competition enabled the participants to express their talents and skills through speech, singing, acting, shayari, or poetry on any topic of their choice. Next up, was the **Mystery of Image competition**. It was open only to non-maitreyi participants and was all about finding the location in the campus, whose picture was shown to them. This made the activity not only fun but also competitive.

To sweeten the pot, another competition was lined up for the participants: **Waste Wogue**. In this competition, participants had to design and make a dress out of waste material using mathematical shapes. Can we call an event complete without challenging your creative side? For that, another enthralling event called **Geometria** was organized, which involved drawing famous Indian monuments using mathematical shapes. Finally, **Treasure Hunt**, the most anticipated competition, was held with five rounds of hints and clues that had mathematical hints or dares for the teams to solve. Additionally, there were four filler games: **Follow my Leader**, **Buzz Wire**, **Walker Bottle** and **Stack-Over-Blow**, to keep non-participants entertained.

All the activities were designed to engage the students and enhance their logical thinking and mathematical creativity. The event was a perfect blend of competition, creativity and fun, with food and accessory stalls arranged for the audience. The event attracted many students from different departments and colleges. The combined efforts of all the teachers, office bearers, event coordinators and volunteers made the event a massive success.

In conclusion, the event was significant in cultivating a competitive spirit among the students and teaching them the importance of mathematics in daily life. It was an exciting and engaging way to learn and appreciate mathematics and left a lasting impression on everyone who participated.

## FINDING THE CORRELATION:

# Mathematics & Astronomy

"Mathematics is the language with which God has written the universe." — Galileo Galilei

Mathematics is the foundation of astronomy, which made the discovery of the universe possible. The creation of astronomy was made possible by ancient mathematicians who enabled different nations to engage in space exploration. Many inventions and important discoveries have been exploited through a combination of mathematics and astronomy. Mathematics helps people to understand the complex universe. Astronomy leads scientists to the glorious foundations and deep mysteries of the infinite galaxy that surrounds our planet. Today, these two concepts offer many possibilities and wonders.

The combination of mathematics and astronomy went hand in hand, as it is rightly said that "Science grows more from what is learned to ignore than to take into account." As a result, the line between the two concepts was blurred, making it difficult to see the combined effect of both concepts.

Most of the mathematics needed to interpret the information obtained from astronomical observations, which comes from physics but is intertwined with processes. So, they may not yet have sufficient physics to explain the observations. Certain situations require special consideration.

The first mathematical and astronomical breakthroughs occurred during the Mesopotamian and Babylonian civilizations, especially during the Seleucid period. Methods have been developed to predict the position of eclipses and celestial bodies in terms of latitude and longitude. They are measured relative to the apparent movement of the Sun. A table was created based on the calculation procedure and is provided for reference.



Photo credit: The Crafoord prize

Telescopes are an astronomer's best friend, and surprisingly, the way the average telescope works is heavily algebraic. The camera of a telescope basically records a series of numbers that quantify photons or electrons, and records a series of numbers that relate to the total amount of light produced by various celestial bodies. Mathematics and statistics are used to understand the information contained in these numbers.

Today's astronomy uses mathematics to calculate the orbits taken in space by rockets, satellites, and probes. It is also used to encode pixels in photographs and to model space shuttle components. Additionally, global positioning system calculations require mathematics to deliver messages after data compression. Astronomy uses mathematics in the calculations which guide spacecraft to checkpoints that connect them to the space stations. This involves complex calculations that must be dealt with in order for two objects to collide safely. Error analysis and the Maximum Principle are two of his other mathematical principles used to improve the trajectory of the space shuttle.

Thus, mathematics and astronomy have grown and enhanced each other, precise types of mathematics are utilized in astronomy to uncover the most unfathomable secrets of our universe.

Reference : Astronomer Guide by Dennis  
Written by- Hiya Srivastava, 3rd year

# THE MIND LAB 4.0



## BINARY PUZZLE

Each square in the puzzle may contain either 0 or 1.

- a) No more than 2 adjacent squares may contain the same digit i.e. you cannot have three in a row or column of the same digits.
- b) Each row and each column must contain the same number of 0s and 1s, e.g. for a 10\*10 grid, each row and column will contain five 0s and five 1s.
- c) No row may be same as another row and no column may be same as another column. However, a row may be the same as a column.

0									
		1				1	1		
	1								0
			0		0				
0							1		0
	1		1						
0				0	0		1		
1									
	1		1	1					0

0	1	0	0	1	1	0	1	1	0
0	1	0	1	0	1	1	0	1	0
1	1	0	1	0	1	0	1	0	1
1	0	0	1	0	1	0	1	1	0
1	0	1	0	0	1	1	0	1	0
1	0	1	1	0	0	1	1	0	1
0	1	0	1	0	0	1	1	0	1
0	1	0	1	0	0	1	1	0	1
0	1	0	1	0	0	1	1	0	1
0	1	0	1	0	0	1	1	0	1

*Solution*



## 7 LITTLE WORDS

Build 7 words from the given box using the hints below.

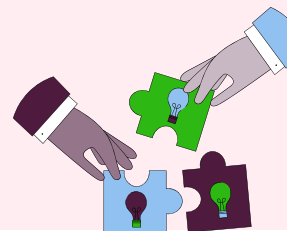
1. Father of Maths
2. Fear of Numbers
3. Prince of Maths (India)
4. A rectangle state of USA
5. Shape of Honeycomb cells
6. "A Mathematician Apology" 's Author
7. Name of Symbol \*

- 10 letters
- 13 letters
- 9 letters
- 7 letters
- 8 letters
- 5 letters
- 8 letters

TER	DY	HMOP	NUJ
EDES	AN	AS	AG
HAR	HIM	ARIT	WYO
HOB	MING	ARC	ONS
RAMA	HEX	IA	ISK

*Solution*

1. Archimedes
2. Arithmophobia
3. Ramanujan
4. Wyoming
5. Hexagons
6. Hardy
7. Asterisk \*







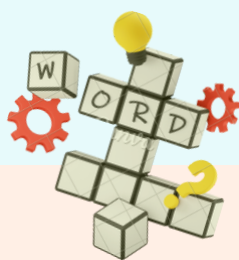
# MINESWEEPER

Locate exactly 20 mines in the empty cells so that each numbered cells describe the number of mines that the cell is adjacent to. Cells are considered adjacent if they share either a side or a corner. No cell contains more than one mine, and numbered cells never contain mines.

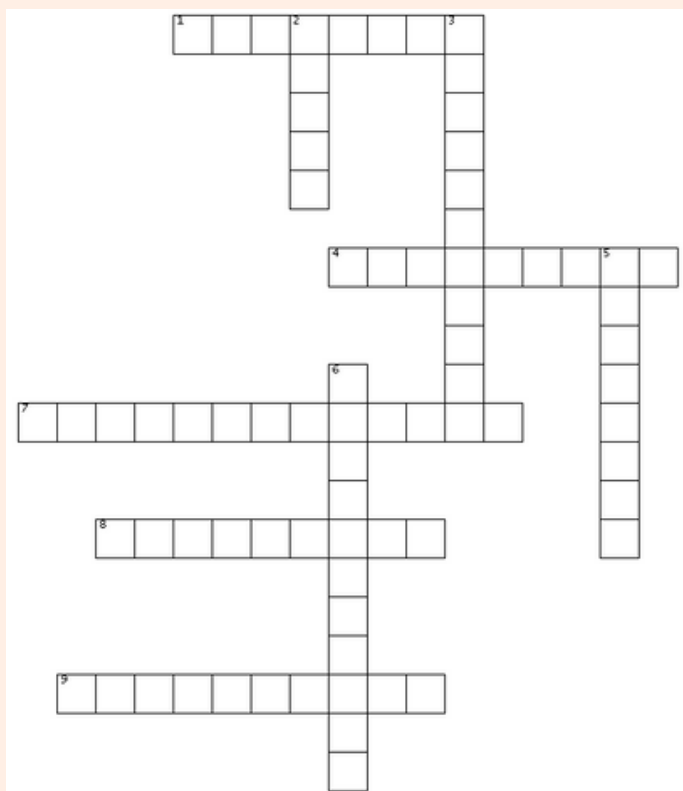
	1		2	2	2		1		1
	3					2		1	
	2			3	3				2
									1
	2		3	2			2		
		4			1	2		2	
1									
2				3	4			2	
	3		1					4	
2		1		2	3	4		4	

2	●	2	1	●	●				
●	3	●		2	2	3	1		
1			●	4	●	●			
	1		●	●	3	2	●	2	2
2			●	3	2	●	3	2	2
3	●	4		1	2	●	3	2	1
4	●	●	●	2	2	●	2	1	
4	4	2		2	●	1	2	1	
●		●		●	1	2	●	1	

Solution



# CRISS-CROSS



## ACROSS

1. A term on its own
4. Terms that have the same variable(s) raised to the same exponent(s) are
7. Which number system does not have the symbol for zero
8. Angle that lie outside the parallel lines on opposite sides of the transversal
9. The largest known number in the world

## DOWN

2. I am an odd number. Take away one letter and I become even. What number am I?
3. Line, ray or segment that intersect two or more coplanar lines, rays or segments
5. Expression with one term
6. A matrix having unequal number of columns and rows

Solution

1. Constant
2. Seven
3. Transversal
4. Like Terms
5. Monomial
6. Rectangular
7. Roman Numerals
8. Alternate
9. Googolplex

# Alumni Talks



## Awanya Dabas

*"Those experiences and interactions will be priceless and unforgettable, for we have created something far stronger than a network, we have created a bond."*

I came to college with no clear vision, too young to know what I would do in life, scared of the outside world. I won't say that everything has changed. I continue to make big & small decisions, but the difference Maitreyi made was that I am better informed & far more prepared than I used to be. I have grown personally and professionally. And without a doubt, Maitreyi has been instrumental in this process. It was in college that I started participating in co-curricular activities and doing internships. I discovered my profound interest in leadership, management and the corporate world. I had the most caring, most supportive and most understanding teachers, who helped me to their best. Each & every faculty member of the mathematics department always tries to push & motivate you for the better (which I am sure every student will agree with!)

A lesser-known fact is that University of Delhi is a hub of different cultures & languages. At Maitreyi, I met people from different states and cultures, learnt to respect others' values and beliefs. Every single person I met had an individual impact on my life, everyone taught me something new, helped me understand my inner self. I figured who I am, and what I want to do in life.

Right now, I find myself absolutely ready to go out there and explore! It has been a surreal experience. Moving onwards and upwards, confident and ready to take on the world!



## Mausam

*"Choosing Maitreyi College for graduation in Mathematics Honours was the perfect decision of my life."*

After schooling, most of us don't have knowledge about which college is good and which is not. The Mathematics Department has the best faculty among all the other departments. There is so much cooperation between the students and teachers, which I used to see in schools. In the first week of college itself, voting took place for the CR position of the class & I became the CR which added more duties to my life. In the first semester, we all tried to juggle between classes, mid semester exams, Freshers' Party, Diwali Mela, Fest and many more, but in the beginning of second semester, when we just learned about how to bunk classes, COVID-19 hit and took our college life back for 2 years. After this, everything went online; classes, exams and all other activities. Becoming the Treasurer of the Department, made me more confident. We all yearned for an offline farewell. After 2 years, coming back to college was again the same feeling as on the 1st day of college, but thankfully we got the farewell offline which was thrown by our loving juniors. They planned so many things for us. Farewell was the beautiful end to our college life.

## Bhumika Papnai



*"My greatest learning was, time management i.e., how to utilize your time in the most efficient manner."*

Initially during graduation, there was a sudden pressure of competition. Every student was so studious that automatically one gets motivated to study. For me, the second year was very difficult because I was involved in multiple activities including multiple internships, summer research projects and so on. But I am grateful to the teachers who made it easy to sail through this year. One of the most important things that I learnt was time management i.e., how to utilise your time in the most efficient manner. This helped me in becoming an all rounder student. All the credits goes to the college and our department which conducts co-curricular activities to boost our skills and confidence. Thank you so much for everything.

## Sunidhi Chadha



*"I strongly believe that Maitreyi College has built a strong foundation for me to face the world confidently."*

It was back in 2019 when I joined Maitreyi College as a student of Bsc.(Hons)Mathematics. Honestly speaking, I was really a timid person, lacking in confidence and communication skills. But during my course, apart from academics I really worked on all the things I lacked. This could not have been possible without the support of our lovely teachers. I believe that the teachers in Maitreyi are really a source of motivation. They encouraged us to participate in various departmental activities and supported us during the lockdown as well.

Furthermore, the mentorship which was provided by my teachers helped me a lot in taking certain decisions. I remember that I was very confused regarding the course selection for my master's degree and I even consulted teachers from our department. Their guidance pushed me to a final conclusion and today I am pursuing my Masters in Data Science from University of Western Australia.

Whenever we required guidance the teachers were always there to enlighten us. This is all we need to push us to accomplish the unthinkable.

I am glad to be a former student at Maitreyi College.

# Ex - Faculty Column



**Dr. Shelly Verma**

*"The teaching and non-teaching staff here are very supportive, and I enjoyed spending quality time with students who are the most innocent and pure-hearted souls on this planet."*

Maitreyi College, where I gained my initial college teaching experience, is my parent institution as a teacher. The college gave me a platform to learn about the cultural and traditional aspects of college life along with the academic aspects. I always feel blessed that I began my teaching in the healthy and productive environment of Maitreyi College. In my college days, I was more academically oriented and participated less in cultural events. However, as time passed, I realized that I could have enhanced my personality by participating in these events.

As a coordinator of the Mathematics Department Association, I enjoyed working with students and colleagues to organize various events such as Departmental Festivals, Farewells, Freshers' Meet, and Teachers' Day Celebrations. I observed that active participation in the organization of different events developed skills like leadership, improved communication, and management in students. I must acknowledge that our students have been so creative and talented that I could learn many things from my students as well. I would like to add here that it was remarkable to have the opportunity to work with my colleagues from different departments in various committees like time-table, workload, and NAAC to name a few.

I have had a great learning experience at Maitreyi. Last but not least, Maitreyi bestowed me with many good friends and colleagues who always stood with me in my time of need. I will really miss my dearest students, supportive staff, helpful and lovely friends. Best Wishes to all the students!!



**Dr. Deepti Kaur**

*"The open and supportive environment in college has allowed us to experiment with new teaching techniques and find new ways to engage our students."*

As I reflect on my time at Maitreyi college, I am filled with a mix of emotions. On one hand, I am grateful for the opportunity to have worked with such a diverse and motivated group of students and to have contributed to their educational journey. On the other hand, I am sad to leave this institution that has been a significant part of my life for many years.

**Ms. Monika Meena**



*"The college's annual festival was another highlight of my college years, providing countless fun and adventurous experiences. Additionally, overcoming my stage fright was a defining moment in my college life."*

I began my academic journey at Maitreyi College in 2013, feeling grateful for the opportunity to graduate from one of Delhi University's esteemed institutions. My experience at Maitreyi was truly incredible and will remain cherished in my memory. As a hindi medium student, I was initially unsure of my abilities, but the faculty members were exceptional, provided me unwavering support throughout my studies.

Furthermore, the faculty arranged monthly workshops and screenings of mathematical movies such as "A Man Who Knew Infinity" to break the monotony of the routine and provide additional emotional support.

In 2020, I joined Maitreyi College's faculty, fulfilling a lifelong aspiration. Maitreyi has become a second home for me, providing me with everything from love and guidance to career opportunities and unforgettable memories. Overall, Maitreyi college has played a significant role in shaping me into the person I am today, and I am grateful for the time I spent there. Even today I am not there in person but Maitreyi still holds a special place in my heart.

I would like to say that I have had the privilege of working with some amazing colleagues who have made my time at the college a truly enjoyable and enriching experience. From Principal Madam to my Departmental colleagues and colleagues from other Departments, I have found everyone to be supportive, friendly, and always willing to lend a helping hand. The time I spent in the college was challenging yet rewarding and it allowed me to develop my skills and become a more effective educator. The open and supportive environment in college has allowed us to experiment with new teaching techniques and find new ways to engage our students. The relationships I developed with my students and colleagues were among the most gratifying aspects during my time at Maitreyi College. I may be leaving the college, but I will always cherish the memories and experiences that I gained as a teacher.

# POETRY FRAGMENT

## हिंदी के अध्यापक

- Dr. Renu Khareja (Retd. Associate Professor)

हिंदी के अध्यापक  
थे बड़े विद्वान  
बच्चों को मनवा लेंगे  
था उनको अनुमान  
पर उनके भी पाँव तले से  
खिसक गया मैदान  
जब बच्चे बोले कि  
कक्षा में हम आजाएंगे  
श्रीमान  
पर पहले हमको दीजिए  
" शिष्यदक्षिणा " दान ।  
शिष्य दक्षिणा शब्द सुनकर  
वे थे बड़े परेशान  
गँगा उल्टी भी बहती हैं  
आज गए वो जान  
अब उस उल्टी गँगा को  
राह सीधी पर लेकर आना  
कार्य बहुत था कठिन  
यह सबने जाना  
फिर उन्होंने सोचा कि  
जो भी हो यह बच्चे हैं  
ओर कुछ ना कुछ तो  
अकल के भी कच्चे हैं  
पहले चलो कक्षा में  
बात करे दो चार  
फिर तुमको हम दिलवा देंगे  
अच्छे से उपहार

लेकिन बच्चे हमारे  
जान गए उनकी चतुराई  
और वहाँ पर " जूते दो पैसे  
लो "  
जैसी परिस्थिति आई  
[ पहले जूते, पहले पैसे ]  
[पहले कक्षा , पहले उपहार]  
गणितज्ञ प्रधानाचार्या जी के  
जब कान पड़ा यह शोर  
काम धाम को छोड़कर  
भागी वे इस ओर  
सिटी पिटी गुम हुई बच्चों की  
जब उनको सम्मुख पाया  
पर उनके मुख वाच्यो ने  
अर्थ सही लगाया  
बोले वे  
एकलव्य ने गुरुदक्षिणा में  
काट दिया अंगूठा  
ओर तुम लोग यूँ हम सबको  
दिखलाते हो ठेंगा  
ठेंगे की भी फ़िक्र नहीं  
हम आँखे लेंगे मुँद  
पर शिष्य दक्षिणा के रूप में  
हम तुमको क्या देंगे ?  
और तुम्हें जो हम देते है  
प्रत्येक विषय का ज्ञान  
इसे हमारी ओर से समझो

शिष्य दक्षिणा दान  
ज्ञान रूपी इस पूँजी में  
सदा ही होगी वृद्धि  
जितना इसको खर्च  
करोगे  
ब्याज़ पाओगे चक्रवृत्ति ।  
बच्चों को जब यह  
गणित का  
प्रश्न समझ में आया  
तो उन सबने मिलकर  
कक्षा की ओर कदम  
उठाया  
इस तरह से काम कर  
गयी  
प्रधानाचार्या की  
बुद्धिमानी  
ओर बहने से रुक गया  
सर के उपर पानी  
ओर बहने से बच गया  
उल्टी गँगा का पानी ॥



## Dear Maths

Dear maths,  
 You were a subject of so much interest.  
 But now with English and Greek alphabets,  
 You make me feel a lot of regret.  
 The theorems with their statements and proofs,  
 How can you be so uncool?  
 One can pass you with flying colours,  
 Only if s/he is willing to put extra efforts.  
 No way studying a day before exam works,  
 Because dear maths is actually tough.  
 Analysis, algebra, calculations and geometry  
 Half of mathematics is assumption based theory.  
 But dear maths,  
 You can be a subject of some interest.  
 As you can increase logical thinking,  
 And the irrational world shrinking.  
 Interrelated with so many other fields,  
 Even a new research can lead to amazing discoveries.  
 I was so surprised to know,  
 Maths is present in subjects like chemistry also.  
 Actually, dear maths  
 You are really a subject of much interest.  
 But only to the ones who want to understand,  
 As it requires loads of hardwork and patience.  
 Be it astrophysics or biology,  
 Maths contributions are always worth noting.

~Jaahnavi  
 (2nd year)

## Mathematics chooses you

Follow your heart and mind,  
 Mathematics is one of its kind,  
 When path taken to prove, matters more than statement,  
 If it clears the doubts, doesn't matter how much time has went.  
 Who knows it better than Fermat had,  
 It took ages to prove what he said.  
 Here research starts from logic,  
 And you often say, this is magic!  
 "Mathematics chooses you, not the other way"  
 Who ever said it must've gone through a rocky way to say.  
 Numbers have their own charm and fame,  
 Thanks to Ramanujan, some got special name.  
 Mathematics is always more than words to describe,  
 It's boundless yet glorious, yes you got the vibe.  
 Sooner or later you will get to know it is ubiquitous,  
 Till then keep living in a space where Mathematics is just a phase.

~Dr. Khushboo Bussi

## ज़िंदगी

जीने वालों की कदर करें,  
 मरने वाले अपनी तारीफ नहीं सुना करते,  
 जीते जी खुशियां बाटें,  
 गम के साये कब्र में अँधेरे नहीं करते,  
 करता है अगर कोई फरेब,  
 सम्भालो अपने आप को,  
 लेटे हुए मुर्दे शिखा भी नहीं करते,  
 न करते है शिकायत,  
 न उसका सुलह करते,  
 करते है बस सब मीठी बातें,  
 फरेबी जनाज़ा तक नहीं पढ़ते !!

~Siya Dahiya  
 (2nd year)

## Women of today!

Now I find myself safe no more,  
 As if there's no respect for girls anymore  
 The kind of world I want to see  
 Seems now an impossible wish to be  
 The more advanced we're becoming along  
 More backward opinions are beginning to form.

Here we dream a developed nation  
 But the standard of thoughts are falling by every  
 generation  
 Can't think what the future's gonna be  
 But I can tell it wouldn't be safe place to be  
 Being a woman I feel I've a lot to prove  
 And even have the facilities to improve.

Yet again I stand dependent  
 Continuously going through the feeling of resentment  
 It's easy to question my character  
 or even judge me by my figure

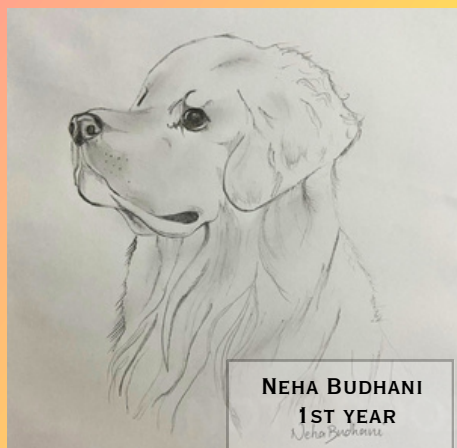
But the truth isn't going to stay hidden  
 That I'm also a soul which isn't forbidden  
 I might be soft to thoughts and people  
 But I'm also a strong individual  
 I might be an easy target to deceive

But you can't estimate what all I can achieve  
 The only drawback I feel in me  
 is that I often forget how worthy I'm already  
 Yet again, here I stand strong  
 To break this chain and move on

To create a world of equity  
 Where no one ever feels risky about their safety

~Aadya Khullar  
 (3rd year)

# THE PICTURE PERFECT



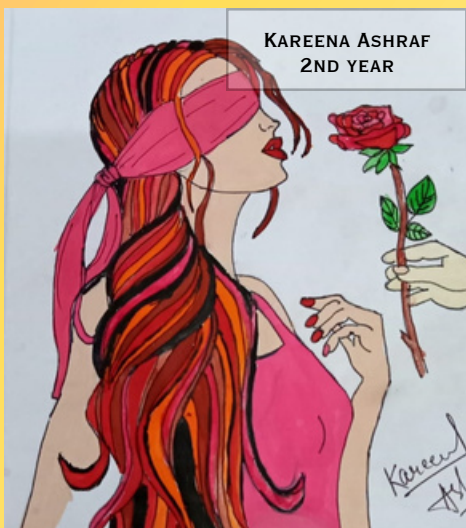
NEHA BUDHANI  
1ST YEAR  
*Neha Budhani*



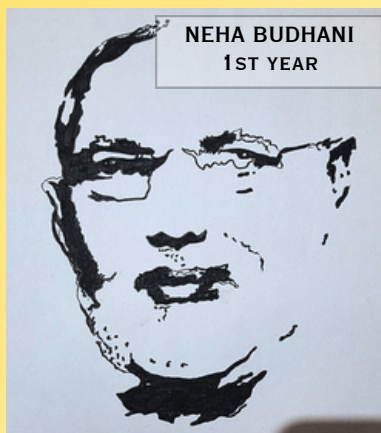
MEENAL DIXIT  
2ND YEAR



AKSHITA SINGH  
2ND YEAR



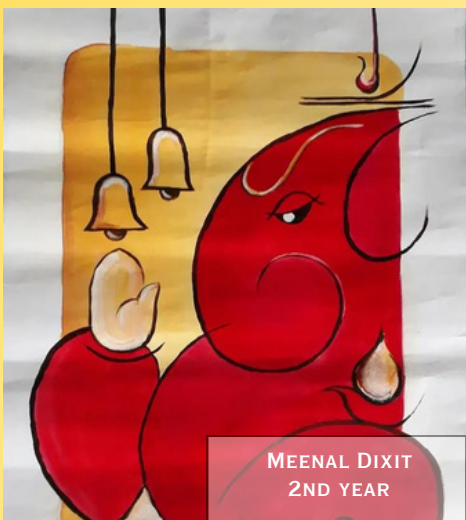
KAREENA ASHRAF  
2ND YEAR



NEHA BUDHANI  
1ST YEAR



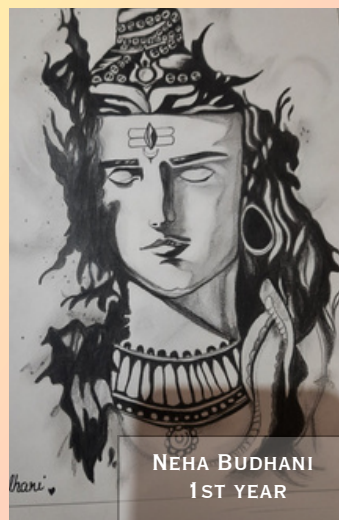
KAREENA ASHRAF  
2ND YEAR



MEENAL DIXIT  
2ND YEAR



SHREYA SAINI  
2ND YEAR



NEHA BUDHANI  
1ST YEAR



PRIYANSHI VERMA  
3RD YEAR



SHREYA SAINI  
2ND YEAR



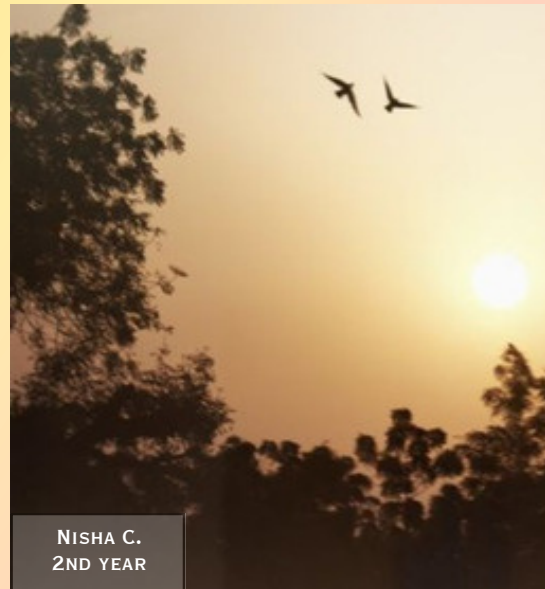
AADYA KHULLAR  
3RD YEAR



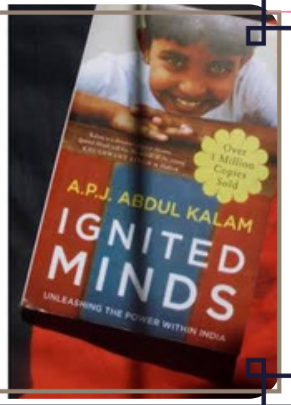
AADYA KHULLAR  
3RD YEAR



ANURADHA  
3RD YEAR



NISHA C.  
2ND YEAR

**IGNITED MINDS :****A Book for Youth's Vision****by "Dr. A. P. J. Abdul Kalam"****HIDDEN FIGURES:  
A MOVIE REVIEW**

WRITTEN BY JAAHNAVI

**Director:** Theodore Melfi**Cast:** Taraji P. Henson as Katherine Goble, Janelle Monae as Mary Jackson, Octavia Spencer as Dorothy Vaughan.

It is an adaptation of a book with the same name by Margot Lee Shetterly. This film is set in the 1960s, America. It introduces us to the achievements & challenges of the people behind the launches and orbital space journey of John Glenn working resolutely in their respective departments, and especially; the 3 African-American women giving us a huge motivation of "living the impossible."

Katherine Goble Johnson was the first negro "colored" women to work in the space task group. She had to walk half-a-mile (that is 800m) to use the restroom due to the segregation for colored people and was even provided a separate jar for coffee because no one wanted to touch the jar she used. But she stood tall to the racism and performed her job without complaint. She always had an affinity towards math as she brought it to her daily life - always identifying shapes of objects she saw, memorizing prime numbers while walking. She became exceptional at calculations and analytic geometry. Later, she performed calculations for Apollo II mission to the moon and the space shuttle.

Dorothy Vaughan faced professional barriers due to her skin color. She had the responsibilities of a supervisor but was neither paid nor given the title. Once she was forced out of a library which was meant for the whites, she entered there as the library for the colored people did not had the information she was searching for and she ended up stealing a book. By demonstrating her capabilities, she managed to secure the position of specialist in electronic computing for herself and her team, and oversaw the programming of the machines.

Mary Jackson became the first negro to study at all-white Hampton High School because she wanted to be an aeronautical engineer. She appealed for the same to the court, who agreed for her attending night classes. She was very confident, straight-forward and never felt inferior for being a negro. She fearlessly stood for herself and her decisions, making her a very powerful woman to look upon. Concluding, Hidden Figures is a must watch movie for all those who dream big, want to live the impossible, need some inspiration and love mathematics.

**IGNITED MINDS:  
A BOOK REVIEW**

WRITTEN BY SNEHA SINGH

**Author:** A.P.J. Abdul Kalam**Publisher:** Penguin Books**Genre:** Inspirational Fiction & Biography

Dr. Kalam dedicated this book to an intermediate school child he met at a school. While talking to students, a question came up: "Who is our enemy?" Kalam recalled, that many answers were given, but the one which all agreed upon came from a student Sneha Thakkar: "Our enemy is Poverty. It is the root cause of our problems and should be the object of our fight, not among our own".

To motivate Indians, and its youth especially, is the central theme of Ignited Minds, which continues the trajectory of thoughts taken up in his earlier two books, "Wings of Fire" & "India 2020: A vision for the New Millennium". He relied on the power and potential of youth. This book has plain speaking. In the nine chapters of this book, he took up various themes like rumination on peace, patriotism beyond politics and religion, his interaction with children all over India, insights he gained from saints and seers, scientists, outstanding thinkers and others, etc.

The quote "Dream, dream, dream. Dreams transform into thoughts and thoughts result in action" inspires one to chase their dreams and turn them into reality. The song of youth, 'Me and My Nation-India' in the end of the book, shifts the ground of the readers. It guides towards the path of success and that one should never be afraid of hard work. Everyone, especially the youth of India should read this book to get clarity of thoughts and a vision to make India a developed nation.

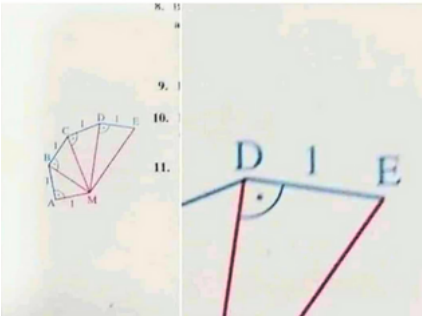
Why, given all our skills, resources and talents, do we settle so often for the ordinary instead of striving to be the best? At the heart of Ignited Minds is an irresistible premise: that people do have the power, through hard work, to realize their dream of a truly good life.

Kalam's vision document of aspiration and hope motivates everyone to unleash the dormant energy within India and guide the country to greatness.



# MEME CORNER

Even my math book tells me what to do



❤️ 💬 📌

Name- Harsh  
College- Shaheed Bhagat Singh

\*A math problem with no exact solution exists\*

Assumptions :



❤️ 💬 📌

Name- Jesmal Jalal  
College- IISER, Tirupati

when I got the negative age of Rohan in a maths question


le me to Rohan :



❤️ 💬 📌


Name- Mausam Kumari  
College- Maitreyi College

**Differentiation and Integration of  $e^x$  :**  
**trying to reduce  $e^x$**   
**Meanwhile  $e^x$  :**




❤️ 💬 📌

Name- Sampda Pandey  
College- PGDAV



DRAW A TRIANGLE.



PROVE THAT THIS IS A TRIANGLE.

❤️ 💬 📌

Name- Abhilasha  
College- JMC


Mon, 08 Feb  
Today 1:53 PM

$\lim_{x \rightarrow 0} \left( \frac{1}{0} \right)$

Evaluate the Limit

YOUR GIRLFRIEND :)

\*DOES NOT EXIST\*

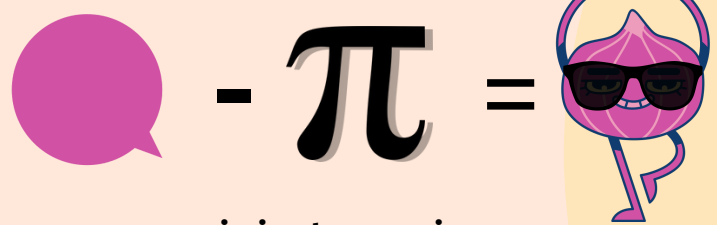


❤️ 💬 📌

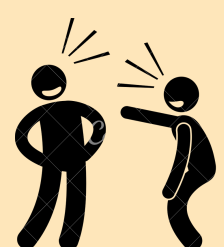
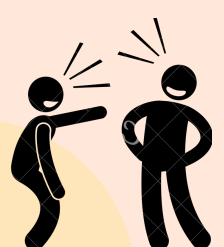
Name- Nivedita Panwar  
College- Maitreyi College

MATH PUN

An opinion without a  $\pi$



is just an onion





# 10 AI TOOLS FOR COLLEGE STUDENTS



By a student, for the students



-Shivangi Pandit (3rd year)

Artificial Intelligence (AI) is transforming various aspects of our lives, including education. These days, AI has become a necessary factor to efficiently and accurately get your work done. AI-powered tools have made it easier for students to learn, study, and excel in their academic endeavours. Here are some of the most valuable AI tools for students:

(Disclaimer: None of these resources are being promoted, all of these have been mentioned just to help you out)

## Grammarly

Grammarly is an AI-powered tool that helps students improve their writing skills by detecting grammar and spelling mistakes. It also suggests better sentence structures, and even provides synonyms for repetitive words. These suggestions widen the vocabulary of the user and save time in proofreading the work.

## ChatGPT

ChatGPT is a large language model developed by OpenAI that assists and communicates with users through text-based conversations. From answering general knowledge questions to assisting with language translation, and providing advice, it has a wide spectrum of knowledge. ChatGPT is very easy-to-use and thus, proves to be very helpful for every user.

## Magic Eraser

The Magic Eraser is an AI tool that helps to remove unwanted elements from an image. The Magic Eraser analyzes the pixels and then intelligently erases the selected area while preserving the background. The Magic Eraser is a useful tool for photo editing, as it can save time and effort by precisely removing unwanted elements from an image.

## Adobe Podcast

Under Project Shashtra, Adobe has launched an AI-based tool that helps record voices as clearly as you hear them in podcasts without using expensive podcast mics. It helps you with mic checks and positioning your mic well for proper recording. It simultaneously helps to remove the background noises completely and record clear and sharp voices. It is a very helpful tool for online meetings, voiceover in videos, youtube videos, and of course, podcasts.

## Steve.ai

Steve AI is an AI-based tool that helps to make engaging videos online with automated voice-over and ready-made templates to choose from, even animated ones. One only requires to select the theme, followed by the characters according to a brief error-free script. Some minor changes may be needed to give the video your touch, otherwise, Steve AI can help save a lot of your energy and time in editing videos.

## Otter.ai

Otter.ai is an AI-powered speech recognition software for note-taking, meeting highlights, and transcription which converts all online meetings, interviews, lectures, and into texts and further into useful and meaningful notes. One can find it on meeting platforms like Zoom, Google Meet, and Microsoft Teams. With a 90% transcription accuracy, it proves to be a good time saver and helps multi-task.

## Soundraw

Soundraw is an AI royalty-free music generator for video creators. You can choose the mood, the genre, and the length you prefer, and the AI will generate songs in seconds. You can then further customize the song to fit the content. It is especially beneficial for YouTubers and video editors. It saves time and provides quality music according to the need, that too for free.

## Duolingo

Duolingo is a fun, engaging, and effective AI-powered language-learning platform that can help you learn a new language quickly and efficiently. Duolingo uses AI algorithms to personalize the learning experience for each user. It tracks progress and adapts to your learning style, providing instant feedback and personalized recommendations for further study. This can help you learn more efficiently and effectively than traditional language learning methods.

## Zubtitle

Today, 80% of videos watched on social media are played while on mute. For this reason, video creators are realizing that they need to include captions to reach their viewers. Zubtitle detects the speech in the video and converts it to open captions that are timed perfectly. It allows easy editing and customizes the styles of captions, so, they fit the purpose. With, Zubtitle, you can make captions in just minutes.

## Google Scholar

Google Scholar is a free online search engine that focuses on academic literature, including research papers, journal articles, conference proceedings, and book chapters. It is a powerful tool for researchers, students, and academics who need to find scholarly information on a particular topic. It includes a broad range of disciplines, including science, social science, humanities, and engineering. Google Scholar is a valuable tool for anyone conducting academic research. It provides easy access to a vast array of scholarly literature and can help researchers find the information they need quickly and efficiently.

# OUR SUPPORT SYSTEM



**Prof. Haritma Chopra**  
Principal, Maitreyi College



Upper line (from left to right) : **Mr. Shankar Gulia - Dr. Dharmendra Kumar - Dr. Arpit Kansal - Mr. Saurav Kumar - Dr. Shivani Yadav - Mohammad Parwesh Alam**

Lower Line (from left to right) : **Ms. Richa Rajput (Gen. Sec.) - Ms. Sakshi Sharma (Treasurer) - Dr. Archana Paradkar - Dr. Deepti Kaur - Dr. Leena - Dr. Khushboo Bussi - Ms. Rajni Gupta (HOD) - Dr. Neelima Ohri - Dr. Geetan Manchanda - Ms. Priyanka Sahni - Dr. Neetu Arneja - Ms. Nisha Choudhary (Vice - President) - Ms. Shivangi Pandit (President) - Dr. Pawan Kumar**

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**Aadya Khullar**



**Kanika Singh**



**Neha Nautiyal**



**Nisha Choudhary**



**Khushi Setia**



**Jaahnavi**



**Nivedita Panwar**



## EDITOR'S MESSAGE

Dear Readers,

It is a moment of immense pleasure to present the latest edition of our departmental newsletter 'Convergence'. With Convergence, we have always aimed with each edition, to bring the world of mathematics alive for our readers irrespective of their field. I would like to take this moment to thank our honorable Principal ma'am, **Prof. Haritma Chopra** who has always motivated us to move our boundaries and take things to the next level, and **Ms. Rajni Gupta**, Head of the Department, for supporting and guiding us throughout the journey. I would like to acknowledge the untiring patience, creativity, invaluable knowledge and the continued faith that our torchbearer, **Dr. Khushboo Bussi** put into our abilities because of which we could create this ultimate piece of work for you. Working with such a talented and dedicated team is always a pleasure. I deeply appreciate every team member for their relentless work for the newsletter. I would also like to thank everyone who showed faith in us and submitted their work to be published in the newsletter.

"To write is human, to edit is divine" - Stephen King

We hope that the diverse range of content in this year's newsletter will not only inspire your mathematical curiosity but also showcase the vibrancy and creativity of our department.

Happy Reading!!

-Shivangi Pandit