

# 2019 Quantum

## DEPARTMENT OF MATHEMATICS NEWSLETTER

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Quantum Editorial Board 2018-19 with the Principal



Faculty Members of Department of Mathematics  
(L-R) Mr Kuldeep, Mr Mahesh Kumar, Ms Jyoti Darbari, Ms Uma Versha Kakar, Ms Monika Singh, Ms Bhavneet Kaur, Ms Reema Agarwal, Mr Yograj Singh



Éclat Editorial Board 2018-19



Math Department Organising Committee 2018-19



Group photo on 2<sup>nd</sup> Day of Enigma 2019 with the union Team heads and Volunteers



Graduating Batch of 2016-19

### EDITORIAL BOARD



ANUSHA PONIA  
3<sup>rd</sup> Year



NAVYA VARDHAN  
3<sup>rd</sup> Year



RAJLAXMI ADWANT  
2<sup>nd</sup> Year



NAYANA NAIR  
1<sup>st</sup> Year

Greetings from the Editorial Board of Quantum 2019!

We would firstly like to thank the Department for giving us this opportunity to work on the newsletter. This year, besides the print edition, we also released 3 digital editions of Quantum, to further the reach of the Department.

We hope this newsletter is able to truly represent the spirit and enthusiasm of the Department of Mathematics, and lives upto the expectation of the readers.

We would like to extend our gratitude to the Teacher In-Charge, Ms. Uma Versha Kakar, and Association In-Charges, Mr. Yograj Singh and Mr. Kuldeep, for their constant support and guidance at every step.

We would also like to thank everyone who sent in their work to be published, and encouraged us to push the boundaries.

Regards,  
Editorial Board  
Quantum 2019

# UNION 2018-19

## RAJLAXMI ADWANT GENERAL SECRETARY



**Ques. What is the most important lesson that you have learnt as a Union member?**

The biggest takeaway for me is the importance of team work. When you are a Union member, you cannot do things by yourself, and it is very important to have a good professional equation with your co-Union members. Decisions are taken as a team, work is done as a team and you see ideas become reality as a team. The three of us were a team in the truest, purest sense--all for one and one for all.

**Ques. What motivated you to rise up to expectations and keep working for the Department?**

It was the love that I felt for the Department and its endeavours. In my two years at LSR, I have not seen any Department that is a close knit family like ours is. Furthermore, I had a vision for the Department and people entrusted me with making this vision a reality. It was not only my duty, but my honour to work hard to make it a reality. The immense support given to me by the Department always motivated me and kept me going.

## NAVYA VARDHAN PRESIDENT



**Ques. How was your experience being a part of the union?**

Being a part of the union for the past one year has taught me a lot. Dealing with deadlines, organising events, running after the admin to get approvals, it's been a tough journey. But what made it worth all the effort was when people came upto us after an event and told us how much they liked an event. I've also come to realise the importance of double, triple and sometimes even quadruple checking things. All in all, this has been one of the most valuable experiences of my life, more so because of my insanely hardworking co-union members Rajlaxmi and Simran.

**Ques. What message would you give for the upcoming unions?**

To the upcoming unions, I'd just like to say that believe in your ideas, believe in your teamwork, and believe in yourself. Put the work in to take our Department to greater heights, and you'll see the results. I can't stress enough the importance of trusting your teammates because they're gonna be the only ones who will face the lows with you. All the best!

## SIMRAN TREASURER



**Ques. What was the most challenging aspect of being a union member?**

Being a union member, one has to constantly juggle with a hundred things together, be it being in loop with the department authorities, admin or accounts. Sans facilitation of strong valid and feasible points that represent all the stake holders involved, it is difficult to get new ideas implemented, however, on successful completion of a particular event as a union, the happiness is real.

**Ques. What were your expectations as a union member and do you see your vision fulfilled?**

As a union member, I had a vision to conduct career talks for the department as they bring a lot of clarity to the students who are often on the fence regarding what should be done after graduation and keep toing and froing about the path that they must choose. Yes, my vision was fulfilled as after intersection of thoughts with my co-union members, we managed to conduct a career talk series. Further, a two part series of interactive session of the juniors with the third years regarding the career paths chosen by them was also conducted.

## ÉCLAT ED BOARD



**NAMRATA LATHI (left)  
and KUSHAGRI TANDON (right)**  
Editors of the Mathematics  
Journal, ÉCLAT

**Ques. How has your experience been as Éclat editors for the past two years?**

It was a great learning experience for us to be a part of the Éclat Editorial Board for the past two years. It helped us in developing both soft as well as hard skills; soft skills like managing a group of people, being more open to views of other people, public speaking skills and time management; and hard skills like conducting workshops on a technical topic like latex software, editing mathematical review research papers and compiling a journal.

It also gave us an opportunity to work closely with teachers and gave us a chance to work in a professional kind of scenario and learn various kind of skills not possible in a regular classroom environment.

**Ques. What were the major challenges and issues you faced and overcame as editors of a math journal?**

The lack of awareness amongst students on how a review research journal works was a major challenge. We overcame this by teaching students how to structure their papers by giving detailed instructions regarding various subjective as well as objective points and addressing all their concerns. We had the responsibility to act as a link between the teachers and the authors. To kick start our work the first step was to get a hardworking team on board which required a lot of efforts. The next step was to encourage students to contribute towards the journal for which we put a lot of efforts to search prospective topics for them. We also formed a detailed timeline in very beginning of our tenure as editors, only to ensure smooth execution of all the tasks.

**Ques. How did you motivate the students of the department to submit articles/papers for the journal?**

To give the students a feel of writing a mathematical paper we organized a very detailed workshop on Latex to give them a gist of this typesetting software so that typing of the paper isn't a point of obstruction for them in the process of submitting an article. As stated previously, we also searched prospective topics for them. We personally addressed the students our department to explain them the importance of writing a paper and what a wonderful opportunity it is to go beyond the curriculum and explore mathematics in both pure and inter disciplinary aspects.

**Ques. What new additions and improvements do you hope to see in the future publications?**

The following are the suggestions we hope for the future Editorial teams to implement.

- It will be prestigious for the journal to get an ISSN number.
- We would love to see a collaboration of the Éclat Editorial board and the blog committee of our department and start a special blog for Éclat where the authors of previous volumes can share their personal experience of writing a paper and give an overview of their paper to increase the readability of the journal.
- To see the journal take a new step and include papers from students of other departments of our college as well.
- To open sign-up form for the entire college to opt for an e-version of the journal so that it can reach a variety of people and make them interested in mathematics as our journal includes papers from history of mathematics and it's inter disciplinary aspects as well.

# STUDENT ACHIEVEMENTS

## RACHNA GAUTAM (3<sup>rd</sup> Year)

- Secured **2<sup>nd</sup> position** in a multilevel debate competition, **Double Deal** at **College of Vocational Studies**.
- Secured **2<sup>nd</sup> position** in a debate organised by Ministry of Culture, **Turncoat** at **Motilal Nehru College**.

## MUGDHA KHANDELWAL AND SOUMYA SINGH (3<sup>rd</sup> Year)

- Secured **1<sup>st</sup> position** in the Paper Presentation Competition, **Paridhi** at **Indraprastha College for Women**.
- Secured **2<sup>nd</sup> position** in the Paper Presentation Competition, **Spectrum** at **PGDAV College**.
- Secured **2<sup>nd</sup> position** in the Paper Presentation Competition, **Ganitam** at **Shaheed Bhagat Singh College**.

## MANSI GOSWAMI (3<sup>rd</sup> Year)

- Special mention at **साहित्यिक गीत** (12.09.2018), Jesus and Mary College.
- Featured poet at **Poets of Noida 5.0 and Poets of Noida 6.0**, an open mic event in Sector 27, Noida.
- Invited as a **judge** for a Slam Poetry Competition at **Shiv Nadar University**.
- Invited as a **judge and featured poet** for a poetry recitation competition, **Gufatagu** at **Rhapsody'19, Maulana Azad Medical College**.
- Secured **1<sup>st</sup> position** in a Slam Poetry Competition at **Sage'19, Sri Aurobindo College**.
- Secured **2<sup>nd</sup> position** in an advertisement making competition, 'Ad-Mad' at **Sri Aurobindo College**.
- Secured **3<sup>rd</sup> position** at the poetry recitation competition, 'Poetry, Storytelling aur chai' at **Delhi Technological University**.

## VANDITA SHANKAR AND SAUMYA SINGH (2<sup>nd</sup> Year)

Won **2<sup>nd</sup> prize** in **Econopoly**, organised by **Econovista 2019: Annual Inter-College Academic Meet of Department of Economics LSR**.

## SHAGUN AGRAWAL (2<sup>nd</sup> Year)

- Secured **1<sup>st</sup> position** at The Solo Classical Dance Competition at Asia's biggest college cultural fest - '**Mood Indigo**', **IIT Bombay** on 29th December 2018.
- Successfully completed **Alankar Pratham** (equivalent to M.A., first year) in **Odissi Classical Dance** in March 2019.

## JAYA SHARMA AND SHAGUN AGRAWAL (2<sup>nd</sup> Year)

Won **2<sup>nd</sup> position** in **Jeopardy** (a GK quiz involving strategizing) held on February 15, 2019 and organised under **Moments 2019: Annual Inter-College Academic Meet of Department of Statistics LSR**.

## PLACEMENT AND STUDY OFFERS

The following students of the Department's graduating batch of 2016-2019 received job offers during on-campus placements, via the college's Placement Cell:

- **Sakshi Singh:** Placed at Bain Capability Centre as Analyst
- **Soumya Singh:** Placed at Bain Capability Centre as Analyst
- **Shriya Krishna Kumar:** Placed at ZS Associates as Strategy and Insights Associate
- **Sehr Mahajan:** Placed at United Airlines as Associate Analyst
- **Vedika Chadha:** Placed at InMobi as Business Analyst
- **Mansi Goswami:** Placed at Schoogle, Profile: Teaching, Research and Development

## MALVIKA AGARWAL (3<sup>rd</sup> Year)

- Received an offer of admission for the course **MSc Statistics (full time)** from **London School of Economics and Political Science** as well as from Warwick University.
- Received the **British Council 70th anniversary 2019-2020 scholarship** which covers the entire tuition fees of LSE.

## KUSHAGRI TANDON (3<sup>rd</sup> Year)

-Secured **AIR 20** in IIT-JAM

## ANJU YADAV (3<sup>rd</sup> Year)

-Secured **AIR 103** in IIT-JAM

## DREAM INTERNSHIP OFFERS

### SIMRAN (2<sup>nd</sup> Year)

Summer Internship with **JSW Steel**

### LIPIKA PAREKH (2<sup>nd</sup> Year)

Summer Internship with **Citi Bank**

### RAJLAXMI ADWANT (2<sup>nd</sup> Year)

Summer Internship with **Citi Bank**

# DEPARTMENT EVENTS

## FRESHER'S PROGRAMME

After the **Department Orientation Programme** held on 23<sup>rd</sup> July 2018 for the incoming batch of 2018-2021, the **Freshers Programme** was held on 21<sup>st</sup> August 2018. Sporting funky head gears, the freshers experienced an evening full of exhilarating activities and a pleasurable getaway from studies. Faculty members imbued hope and encouraged the freshers with inspiring words. It was a wonderful and refreshing evening. The event ended on a happy note as each fresher made new friends, discovered new talents, explored the 'Magic of LSR' and photographed new memories.

-Aditi Singh and Debomita Kundu (2<sup>nd</sup> Year)

## TEACHERS' DAY PROGRAMME

The Department of Mathematics celebrated Teachers' Day on **6<sup>th</sup> September 2018**. The teachers were honoured with mementos and cards as a token of the students' appreciation for them. The Music Committee put up a performance consisting of several nostalgic songs, while a mesmerizing combination of several retro and western foot-tapping numbers was presented by the Dance Committee.

This was followed by a cake cutting ceremony, and concluding the event, a video filmed by the students was screened for the teachers.

-Shreya Joshi and Jassika Kapoor (1<sup>st</sup> Year)

## LATEX WORKSHOP

A workshop on LaTeX was conducted on **13<sup>th</sup> September 2018**, by the Editors of the department journal *Èclat*, **Kushagri Tandon, Namrata Lathi** along with Sub-Editors, **Khuisangmi Konghay and Lipika Parekh**. The aim of this workshop was to familiarize the first-year students of the Mathematics department with *Èclat*, and to teach them the basics of LaTeX, hence equipping them to publish research and review papers for the same. The workshop began with presenting the 9<sup>th</sup> Volume of the journal to the students who had contributed papers for the year 2017-18, some of whom also gave tips to the first years about topics for research and research methodology.

-Nayana Nair and Rajshree Chandel (1<sup>st</sup> Year)



## MACHINE LEARNING AND PYTHON WORKSHOP

A certified workshop on Machine Learning and Python was organized by the Department of Mathematics from **15<sup>th</sup> September 2018 to 6<sup>th</sup> October 2018**. Students of various departments and faculty members of the Mathematics department participated in the workshop. During the sessions, students were given an insight on the various uses and applications of Python, besides being taken through the introductory steps of programming. Students were also given a brief about the concept of Machine Learning and its uses.

-Aditi Singh (2<sup>nd</sup> Year) and Nayana Nair(1<sup>st</sup> Year)



## ENIGMA 2019 – Annual Inter College Academic Meet

### PANEL DISCUSSION

Enigma 2019 opened with a panel discussion on the topic '**Lifting the veil of social conditioning against Mathematics.**' The event was attended by students from various departments of the college as well as those of **classes 9<sup>th</sup> to 12<sup>th</sup> from Bluebells School**. The discussion was moderated by **Dr Jyoti Darbari**, an Assistant Professor of the Department of Mathematics, LSR. The panelists were **Ms Vidhi Nautiyal**, Math Head for the junior school at The Shri Ram Millenium School Noida, **Dr Priti Dhawan**, Associate Professor at the Department of Psychology, LSR, **Dr. Rita Malhotra**, a mathematician, and former Principal of Kamala Nehru College and **Dr Jonaki Gosh**, Assistant Professor at the Department of Elementary Education. The interdisciplinary discussion also included the active participation of an Internal Student's Cell, LSR which included **Khuisangmi Konghay (2<sup>nd</sup> Year)** and **Rajshree Chandel (1<sup>st</sup> Year)**

-Apurvaa Mittal and Paavni Mangla (1<sup>st</sup> Year)

### MATHSCAPE

Mathscape, is the visual art event of Enigma and was themed '**Parallels**' this year. With photos, paintings and captions describing the same, the event did justice to the beauty of Mathematics. Manorma Pandey from LSR who won the 3<sup>rd</sup> prize said, "I connected the theme to the idea that everyone is unique but complementary to each other, their ideas are different and cannot converge, and in that sense, parallel. But isn't that what makes them complementary and makes the world beautiful? However, people forget this and look at each other in terms of black and white, failing to see that at our core, in spite of our uniqueness, we're all the same."

-Nayana Nair(1<sup>st</sup> Year)



### IPL AUCTION

The event, as the name suggests, was similar to the actual IPL auction. The structure of the event comprised of 2 rounds - the preliminary round and the main auction. Approximately 60-70 teams gave their best to crack the preliminary round.

The **1<sup>st</sup> position was bagged by Shreyansh & Shubham (IIT Delhi)**, and the **2<sup>nd</sup> position** by **Aditya (SSCBS) & Mrigank (Sri Venkateshwara College)**.

"It was really a riveting experience and very well organised. This was my second IPL Auction and I learnt a lot of new strategies and tricks." - Shubham Aggarwal, IIT-Delhi

-Manishika Negi(1<sup>st</sup> Year)



### INFORMAL GAMES

Informal games were organized on **11<sup>th</sup> March, 2019** during the lunch break. The games began with a lot of excitement as students from various departments participated to challenge their mental abilities. In the first game, the player had to look at mathematical graphs and crack the Bollywood dialogue hidden in it. The second game was a two-player game in which numbers from 1 to 20 were displayed on the table. The players had to divide those numbers into 6 piles such that the sum of the numbers in each pile should be 35. The game was fun and engaging.



### PI DAY ASSEMBLY

On **12<sup>th</sup> March**, the Department organized an assembly to celebrate Pi Day. A video was screened, which talked about the origins, applications and other fun facts about the number Pi. This was followed by a short discussion about the same. The event team then conducted a **fun rapid fire quiz**, with questions such as naming movies with a mathematical name, or clicking a geometrical picture. The questions received prompt and witty answers from both students as well as teachers.

### MATHLETICS

On **12<sup>th</sup> March**, a fun competition to test mathematical and athletic abilities was organized. Students were invited in teams of two and the event saw participation from multiple departments. One team member had to draw a chit having some exercise written on it, such as -jumping jacks, one leg hop etc. The other team member had to solve as many mathematics questions as possible, while the first member does the exercise for as long as she can. The questions had to be solved mentally and the teams faced tough competition. **Jaya Sharma and Richa Sharma (2<sup>nd</sup> Year, Math)** emerged victorious.

To flag off Math Week on 7<sup>th</sup> March, a fun and challenging version of **Pictionary** was conducted by the Department. The game was played in teams of two, with few simple rules. One team member drew chits, and had to draw the object written in the chit. The other team member had to decipher the object in 3 guesses. The mathematical twist here was that only certain shapes, such as – circle, square, straight line, trapezium etc. could depict the object. The competition between the teams was intense, with strict scoring and time-keeping by the event management team. **Richa Sharma and Jaya Sharma (2<sup>nd</sup> Year, Mathematics)** became the winning team.



# DEPARTMENT EVENTS

## GUEST LECTURE ON "CAUCHY-SCHWARZ INEQUALITY AND ITS APPLICATIONS"

A guest lecture on 'Cauchy-Schwarz Inequality and its Applications' was organised on 3<sup>rd</sup> October 2018. **Dr. Harish Chandra, Professor of Mathematics, Institute of Science, Banaras Hindu University** graced the event as the Guest Lecturer. Dr. Chandra commenced his session with a simple and concise proof of the Cauchy-Schwarz Inequality for Inner Product Spaces, after which he elaborated on various applications of the inequality. He particularly emphasized its use in the proof of **Polya's Theorem and Turan's Theorem**. Dr. Chandra then answered questions from the students and faculty members. The event was an enriching experience for the students and teachers alike.

- Khuisangmi Konghay(2<sup>nd</sup> Year)



## TED TALK SCREENING

The Mathematics Department, in collaboration with Interface, organised a TED talk screening, followed by a discussion, on 11<sup>th</sup> October 2018. The TED talk titled '**Mathematics is the Hidden Secret to Understanding the World**' was delivered by **Professor Roger Antonsen, University of Oslo**. Antonsen aided his presentation with sensory simulation of simple things, such as 3-D representation of structures, observing graphs etc. It was also noted that mathematics was essentially born out of the need to understand nature's cycles.

-Rajshree Chandel (1<sup>st</sup> Year)

## ENVIRONMENT WEEK

On 25<sup>th</sup> of February, Department of Mathematics, LSR celebrated Environment week. Students of the department decorated a tree of the college as per the theme chosen. The decorations were themed around '**PROPORTIONALITY OF GLOBAL WARMING**'. With the help of various articles and pictures they tried to explain how humans' overuse and misuse of the environment are responsible for and proportional to all the consequences they face today due to global warming.

-Radhika Agarwal (1<sup>st</sup> Year)

## ANUPAMA DUA PAPER PRESENTATION AND SCHOLARSHIP FUNCTION

The 25<sup>th</sup> Anupama Dua Paper Presentation and Scholarship Function was held on 27<sup>th</sup> February 2019 in the memory of the late Ms. Anupama Dua, a brilliant student of the Math department and a dedicated mathematician. The function was graced by Mrs. Dua and her son Mr. Ashish. The emotional climax of the day was however, the nurturing of the tree planted in LSR in memory of Ms Dua. The paper presentation function provided the students with a platform to explore areas of mathematics outside the prescribed curriculum and present their research and ideas to a large audience. Scholarships were awarded to **Anam Ali, Vanshika Jain, Kushagri Tandon and Neela Sindhu from 3<sup>rd</sup> Year and Suhani Mathur and Shradha Rajpal from 2<sup>nd</sup> Year**.

-Rakshita Gothwal(1<sup>st</sup> Year) and Khuisangmi Konghay(2<sup>nd</sup> Year)



## ENIGMA 2019

### SHERLOCKED

One of the most awaited events of Enigma 2019, Sherlocked, witnessed large participation from students across Delhi. Enthusiasm was in the air as all participants got to solving the mystery in teams of two. Excitement took over the detectives, as they rushed in and out to solve the clues.

**K. Aditya and Shubham Kumar (Hansraj College)** were the first to solve the mystery and were declared the winners. **Satwik Pasani and Srividya Pattisapu (AIIMS)** bagged the 2<sup>nd</sup> position.

-Nitya Jaiswal(1<sup>st</sup> Year)



### MONOPOLY : THE MATH EDITION

Enigma 2019 Day 2 presented Monopoly: The Math Edition, introduced last year and, bigger and better this year. It was an amalgamation of mathematics and the much loved game of Monopoly. 'Golden Speed Bump' was a show-stealer—it dared the participants to perform various fun tasks in order to proceed in the game. The event concluded when '**Girnar Ravages**' (**Akash Garg, M. Santosh, Akshat Yadav**) a team from IIT- Delhi won with the help of their problem solving skills and knowledge of Mathematics.

-Paavni Mangla(1<sup>st</sup> Year)



## CAREER TALK SERIES

### Ms. MEGHA SAXENA

(The Princeton Review, New Delhi)

21<sup>st</sup> February, 2019

A session on MBA and higher studies abroad

### Ms. ANIKA JAIN

(Department of Mathematics, Batch of 2014-17)

8<sup>th</sup> March, 2019

The session aimed to introduce Actuarial Science as the emerging career opportunity

### Ms. SONALI CHHABRA

(Department of Mathematics, Batch of 2002-05)

29<sup>th</sup> March, 2019

The session discussed various careers associated with the field of Data Science and Analytics

## MATHEMATICAL TAMBOLA

The Mathematical Tambola was organised on the 13<sup>th</sup> March, 2019 and witnessed enthusiastic response from participants who wanted to grab the lucky ticket. There were three winning positions for completing each row on the ticket. The mathematical twist in this tambola was that the answer of each question was a numerical digit. The winners of the Mathematical Tambola were **Diya Basu** (1<sup>st</sup> year, Mathematics), **Navya Saini**(2<sup>nd</sup> Year, Mathematics) and **Saumya Singh** (2<sup>nd</sup> Year, Mathematics).



## SQL WORKSHOP

A two-day workshop on Standardized Query Language was organized by the Department of Mathematics as a part of Math Week 2019 on the 12<sup>th</sup> and 13<sup>th</sup> of March, 2019. The session was conducted by **Mr. Vibhor Gupta from Weekendr**. SQL is a standardized query language which is used to access and manage data in a database which is used extensively for relational database management systems.

The first session covered basics of SQL such as commands for defining data storage, manipulating data and transactions. During the second session students were given examples to solve, after which a questionnaire was given to students, which required some brainstorming and hence helped the students to grasp the applications of basic commands.



## GUEST LECTURE BY PROF APARNA MEHRA

To conclude the weeklong celebration of Mathematics, on 14<sup>th</sup> March, **Professor Aparna Mehra from the Department of Mathematics, IIT - Delhi**, delivered a lecture on the topic – '**Experiences in the field of Mathematics**'.

Firstly, she talked about the kind of environment and outlook needed for learning beyond books and prescribed syllabi. She stressed on the importance of freedom - for teachers to choose what to teach, and for students to explore subjects and topics of their interest. Further, she talked about the emerging subjects related to mathematics such as Financial Mathematics, Machine Learning, Data Analysis.



# ARTICLES

## प्रतिबिंबि

सहज, सुलभ दर्पण  
जिनमें झाँकते हैं कई प्रतिबिंब  
उन प्रतिबिंबों की परछाईयाँ भी  
एक के बाद एक लगातार  
बढ़ते, प्रतिबिंबित होते कई चेहरे  
चेहरों के साथ अस्तित्व  
अस्तित्व के साथ व्यवहार  
व्यवहार के साथ इंसान  
और इंसान के साथ उनकी प्रकृति  
जो प्रतिबिंबित नहीं होता है, वो है "आत्मा"  
मनुष्य की आत्मा  
दर्पण चेहरे दिखाता है  
खुद में झाँकना नहीं  
दर्पण मुखौटे दिखाता है  
उन्हें उतारना नहीं  
दर्पण वो ही दिखाता है  
जो आप देखना चाहते हैं  
आपकी हकीकत नहीं  
इसलिए,  
झाँको, देखो, डूबो समझो  
खुद को बिना किसी प्रतिबिंबि के  
बिना किसी सहारे के  
पाओ अपनी आत्मा को  
अपने सामने  
शायद तब  
ये जितने भी प्रतिबिंबि हैं  
समाज, दोस्त, परिवार  
सभ्यता, प्रेम  
इन सबके प्रतिबिंबों से  
मुक्त हो पाओ तुम  
और तब शायद जान पाओ  
जीवन का सार  
और उसके साथ अपने जीवन का उद्देश्य  
सहज, सुलभ दर्पण  
उनमें झाँकते कई प्रतिबिंब  
मिटते कई प्रतिबिंब  
साफ होते कई प्रतिबिंब  
प्रतिबिंबि ही प्रतिबिंबि।

-मानसी गोस्वामी 'सियाह' (3<sup>rd</sup> Year)

## CHANGE

I wonder if lives were a bit different, how they would have been  
Stereotypical as always or something that were never seen?  
Had our schools been like Hogwarts, and there existed a station quarter to ten...  
Had we been taught magic, and wands worked more than a pen..  
Had our spells been the only way to experience wonders of all kind  
How beautiful it would be, if tears gave us an insight into a implicit mind.

I wonder if lives were a bit different, how they would have been  
As usual as they use to be, or something really keen?  
How about vampires being our friends, hanging out with them our pass time?  
How about seeing the microbes with eyes naked, and listening to the wind chime.  
Had we been able to foresee things, which are going to happen in our very lives,  
It would have been so easy, for now we won't any longer ponder upon intuitive vibes.

I wonder if lives were a bit different, how they would have been  
Would they be more fascinating, or as sophisticated as it seem?  
What if the people questioned about what WE were and not our plans,  
If they appreciated, rather than comprehending our can not's and cans..  
Where a few bucks do not matter, but what do are a few smiles,  
When hearts can be poured out, without thinking for a few whiles.

Till this day, I wonder if lives were a bit different, how they would have been  
Could they make a difference to a kid, an adult or a teen.  
Sometimes I wonder if lives were a bit different,  
How they would have been...

- Paridhi Agrawal(1<sup>st</sup> Year)

## ABEL MEDAL AND FIELDS MEDAL

Recently, on March 19<sup>th</sup> 2019, **Karen Uhlenbeck** became the first women ever to receive the prestigious Abel Prize, an award specific to the field of mathematics.

Abel Prize is modeled after the Nobel prizes, and is often referred as the **Nobel Prize of mathematics**.

**Professor Uhlenbeck** was awarded the prize for her work in the fields of gauge theory and geometric analysis.

With her Abel Prize, Uhlenbeck is now the second woman among other mathematicians to have been awarded a major award in the field of mathematics. **Maryam Mirzakhani** had won the Fields Medal in 2014, becoming **the first woman** to hold a prestigious international mathematics prizes.

The Fields Medal is a prize awarded to 2-4 mathematicians under 40 years of age at the International Congress of the International Mathematical Union (IMU), a meeting that takes place every four years.

Mirzakhani specialized in theoretical mathematics including moduli spaces, Teichmüller theory, hyperbolic geometry, Ergodic theory and symplectic geometry. Her work was highly theoretical in nature, but it could have impacts concerning the theoretical physics of how the universe came to exist and, because it could inform quantum field theory, secondary applications to engineering and material science.

**Sources:**

<https://news.stanford.edu/>

<https://www.indiatoday.in/>

Compiled by:

Nayana Vardhan (3<sup>rd</sup> Year)

## VEDIC MATHS

Vedic Mathematics is the name given to the ancient system of Indian Mathematics which was rediscovered from the Vedas between 1911 and 1918 by **Sri Bharati Krsna Tirthaji** (1884-1960). According to his research all of mathematics is based on sixteen Sutras, or word-formulae.

These striking and beautiful methods are just a part of a complete system of mathematics which is far more systematic than the modern 'system'.

Vedic Mathematics manifests the coherent and unified structure of mathematics and the methods are complementary, direct and easy.

Let's consider examples of multiplication using some Vedic Maths techniques.

### Vertically and Crosswise :

**Example 1:** 7 x 8

**Step 1:** Here base is 10,

7 - 3 (7 is 3 below 10) also called deficiencies

8 - 2 (8 is 2 below 10) also called deficiencies

**Step 2:** Cross subtract to get first figure (or digit)

of the answer: 7 - 2 = 5 or 8 - 3 = 5, the two

difference are always same.

**Step 3 :** Multiply vertically *i.e.* -3 x -2 = 6 which

is second part of the answer.

So, 7 - 3

x 8 - 2 *i.e.* 7 x 8 = 56

5 / 6

### Same Base Method :

When both the numbers are more than the same base.

This method is extension of the left hand side method.

**Example 1:** 12 x 14

**Step 1:** Here base is 10

12 + 2 [12 is 2 more than 10 also called surplus]

14 + 4 [14 is 4 more than 10 also called surplus]

**Step 2:** Cross add: 12 + 4 = 16 or 14 + 2 = 16, (both same) which gives first part of answer = 16

**Step 3:** Vertical multiplication: 2 x 4 = 8

So,

12 + 2

X 14 + 4

16 / 8

(14 + 2 = 12 + 4 = 16)

So, 12 x 14 = 168

### Multiplying bigger numbers close to a base:

(number less than base)

**Example 1:** 87798 x 99995

**Step 1:** Base here is 100000 so five digits

are allowed in R.H.S.

87798 - 12202 (12202 less than 100000)

deficiency is 12202

99995 - 00005 (00005 less than 100000) deficiency is 5

**Step 2:** Cross - subtraction:

87798 - 00005 = 87793 Also 99995 - 12202 = 87793

(both same)

So first part of answer can be 87793

**Step 3 :** Multiply vertically:

-12202 x - 00005 = + 61010

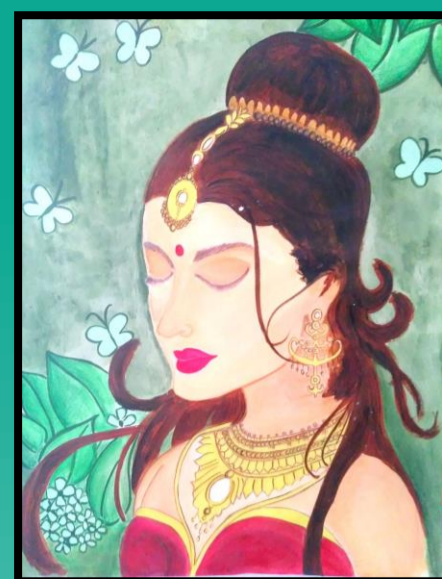
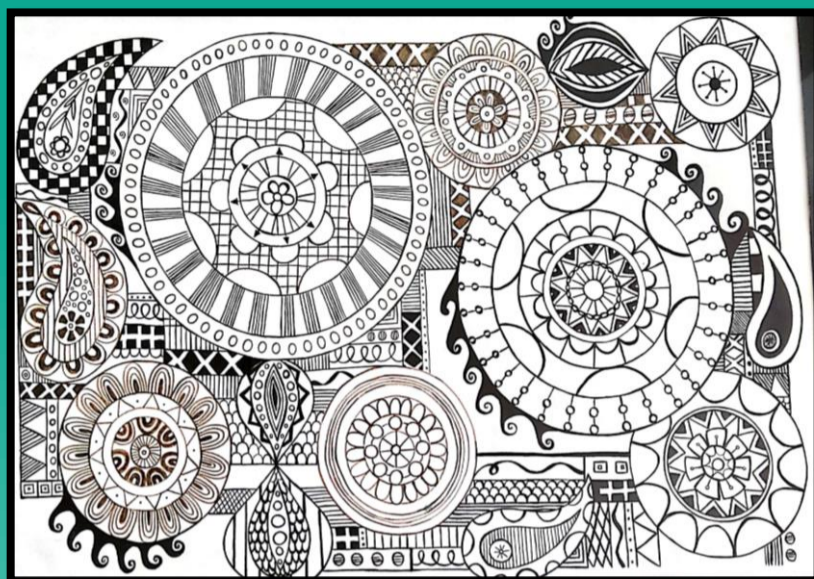
∴ 87798 x 99995 = 8779361010

-Nayana Nair(1<sup>st</sup> Year)

# ARTWORK

MANISHIKA NEGI

2<sup>nd</sup> Year



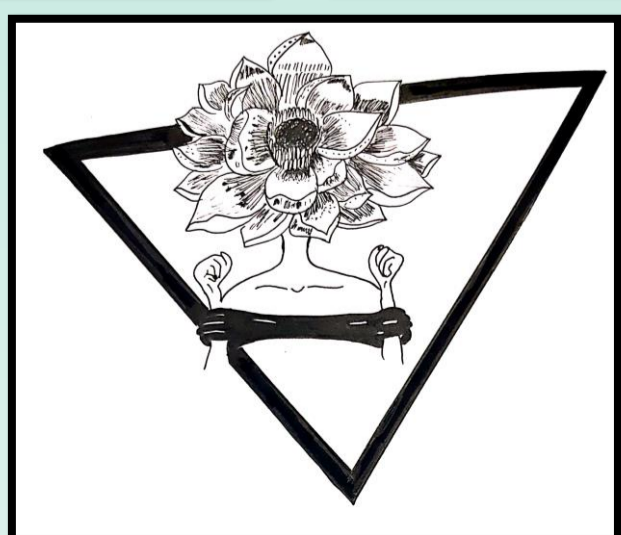
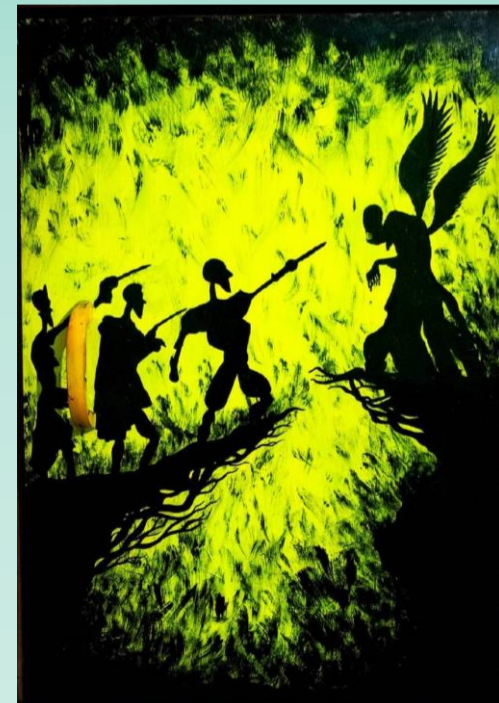
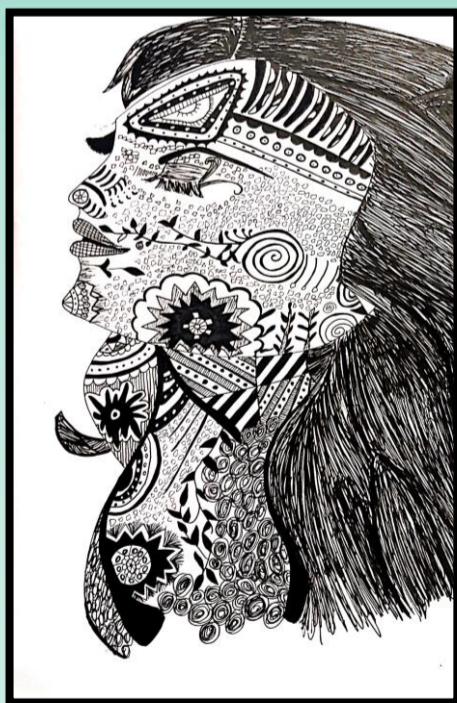
JAYA SHARMA

2<sup>nd</sup> Year



MIHIKA CHITRANSHI

1<sup>st</sup> Year



SWASTI ARYA

1<sup>st</sup> Year

# MESSAGES FROM GRADUATING BATCH OF 2016-19



मैंने LSR में  
इक पूरी  
ज़िन्दगी देखी  
है, यहाँ मेरा  
बचपन

जवानी में बदला और जवानी अब बुढ़ापे में। यहाँ मैंने मौसम के साथ हालातों को बदलते देखा है कि जब जब मुश्किलों के बादल छाते हैं तो उनके बाद हमेशा एक नया सूरज आपका इंतज़ार कर रहा होता है, यहाँ जब मैं आयी थी तो कुछ नहीं था मेरे पास पर अब एक पूरा बक्शा भर गया है यादों का।

**मानसी गोस्वामी**



Ephemeral  
yet  
cementing.  
These words  
can at best  
encapsulate  
my three  
years at LSR.

While I have learnt a lot from my teachers, batch mates, seniors and juniors, I have grown the most outside the ambit of classroom learning.

**Pranathi Iyer**



Life at LSR was pretty hard for me, it was extremely competitive, political, pseudo professional, pseudo feminist, unfriendly. I felt they themselves never walk on the lane which they every time advocate and talk of .

People prejudice you even before you speak and the environment here is no way growing, it is just a race and put this much pressure on you, perhaps restrict your natural growth even. There were times when I realise it has drained me out completely from my body. It was like a downward sloping line tending to vanity. When I look back I didn't find any material accomplishments, yes, I'm leaving a barren land behind me, notwithstanding there's nothing wrong in saying, I am taking away a lot from this place. What all I see now is new me, in all these three years I have seen different versions of mine which I might have never seen before or anywhere else and all this stride me up a lot in my own sight. What I now see more meaningful or long lasting gain, I am now an internally strong, independent, sorted and above all an educated woman.

**Rachna Gautam**



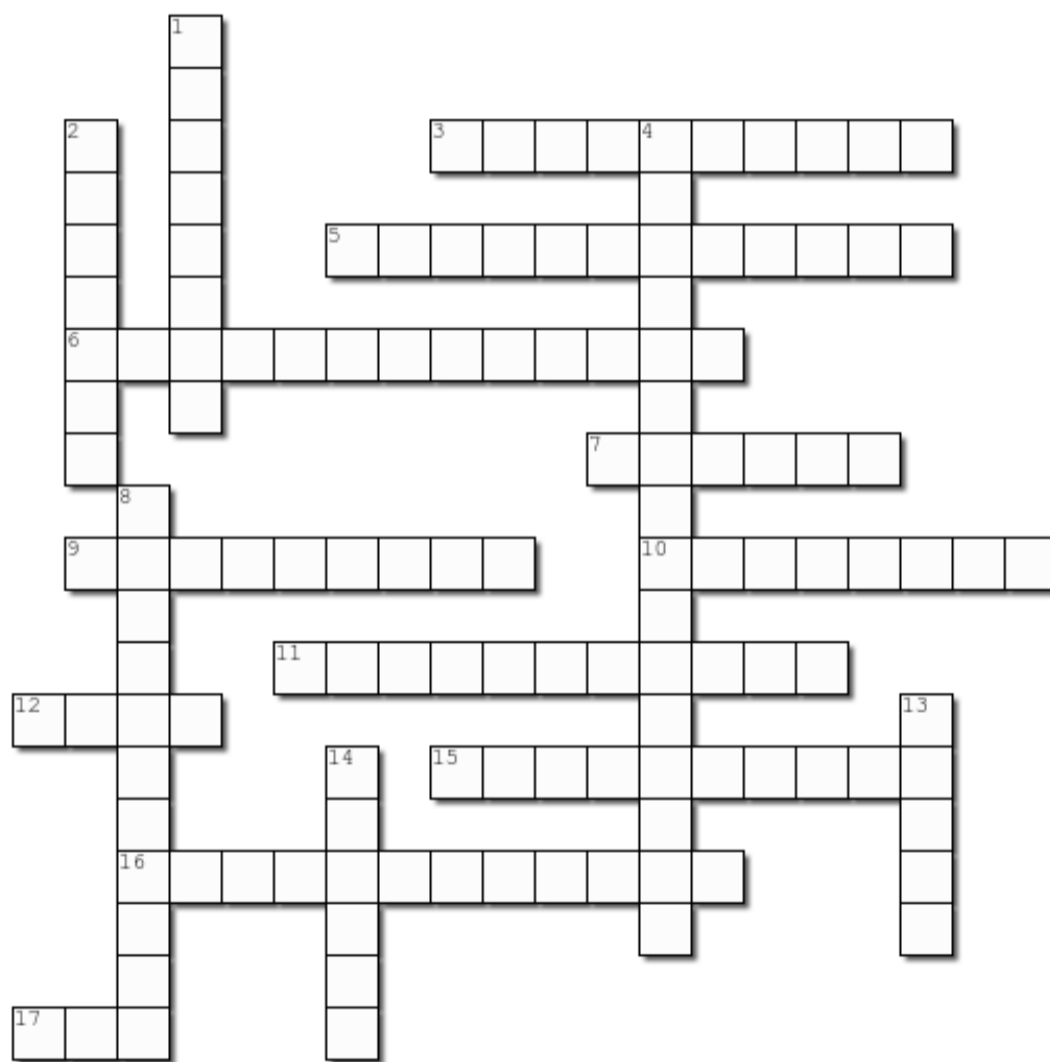
This three year experience was like a rollacoaster. Some moments fun and some nauseating. Met some interesting people and interesting is the word used because I do not want to get into the degree of how much I liked or disliked them. Overall, I would say it has been weird and wonderful. Thank you all, I will miss these red walls.

**Shriya Krishna Kumar**



My journey at LSR has been really challenging. I can never forget the orientation day when I was sitting in the auditorium hearing about the Magic of LSR and wondering if I too will be able to do good enough among all the overachievers. I have always been a homesick child so 1<sup>st</sup> year was a little difficult but things starting improving in the 2<sup>nd</sup> year. It feels as if 3<sup>rd</sup> year was the most beautiful one but the shortest too. I have learned so much in these 3 years. I have actually seen myself growing, fighting through all the odds and giving my best. LSR is magical and I am really going to miss it.

**Vanshika Jain**



## Across

3. John Napier introduced what system of notation as a computational tool in 1614?
5. The Sieve of Eratosthenes is used to find \_\_\_\_ .
6. 'I think; therefore I am.' Name the mathematician. Hint: The coordinate system is named after him.
7. Name the mathematician who proved that there is no largest prime number.
9. I am famous for my Incompleteness Theorem.
10. August F. Mobius was a founder of what branch of Mathematics?
11. The 360-degree circle and the 60-minute hour were developed by the \_\_\_\_ .
12. The only number which cannot be represented by Roman Numerals.
15. 12421 reads the same backwards and forwards. It is a \_\_\_\_ number.
16. Down the rabbit hole, he also did some great work as a mathematician in the field of logic, geometry and matrix algebra.
17. Each row of beads on an abacus stands for a different power of \_\_\_\_ .

## Down

1. I am the first number that is spelt with the letter 'a' in it.
2. I developed the Mathematica software application.
4. I am a shape of constant width. Hint: I am not a circle.
8. Million, billion, trillion, \_\_\_\_ . What comes after trillion?
13. Opposite sides of a die always add up to \_\_\_\_ .
14. I invented the first calculating machine in 1645. My gambling led me to study probability. I am French.