

QUANTUM

2015

DEPARTMENT OF MATHEMATICS | LADY SHRI RAM COLLEGE FOR WOMEN

LIFE AFTER MATH @ LSR

Do you run away at the sign of Aunties and Uncles who ask "Beta, Math ke baad kya karoge? Teaching?" Do you constantly and desperately ask yourself, "What Next!!?" Does the thought of choosing a career after B.Sc. fill you up with dread? Luckily for you, a bunch of third years have gotten together to share whatever we know, and whatever we're taking on next after B.Sc. Mathematics Hons, to help you through the journey.

Management: If you are someone who's fascinated by the corporate world along with being proactive, analytical, innovative or entrepreneurial, want a fast moving career and have great communication skills, then go for Masters in Business Administration (MBA)/ Post Graduation Diploma in Management (PGDM). A basic interest in economics, current affairs and business helps too. The course teaches you the do's and don'ts in the business world. An MBA has many areas of specialization such as Finance, Sales and Marketing, Human Resources, Consultancy, Telecommunications, Business Analytics, IT, Media, and even Entrepreneurship. IIM A/B/C/L/J/K, ISB, XLRI, SP Jain Institute of Management, FMS Delhi, NMIMS and MDI are some of the best B schools.

Economics: Economists provide specialist advice based on the application of economic theory and knowledge. Areas of research can cover any

aspect of economic and social policy, ranging from interest rates, taxation and employment levels to energy, health, transport and international development. If this interests you, you can pursue M.Sc. / M.A Economics. Some institutes that take Math graduates for Economics are DSE, ISI and MDI and LSE abroad.

More Mathematics: This option is only for the brave hearted. Not because it's a tough way to go, but because after 3 years of slogging and

struggling with the subject, it's a herculean task to cope with 2 more years of it. But career options after M.Sc. are very fruitful. Apart from conventional paths like teaching and research, there are other lucrative options. There is a high demand of pure mathematicians in each and every industry. You can choose between designing better and advanced medical equipment, accurately predicting the weather, biomathematics, pharmacology, aerospace, and so on. An M.Sc. in Applied Mathematics opens up a career in climatic modelling, medical modelling, game theory, etc. The various other Masters offered in India or abroad are Cryptography (if you have a fascination for codes), Operations Research, Energy, Ocean and Atmospheric Sciences, Mathematics and Computing, Mathematical Statistics. Some of the best institutes for a Masters in India are IIS and IISc (admission through IIT JAM), TIFR, CMI and ISI. If your passion is to be an engineer, you can sit for GATE examination after M.Sc. and pursue M.Tech.

Computer Science: If you have a passion for computers, you can pursue Master of Computer Applications (MCA). Typically, an MCA is a full-time degree course with a duration of three

years (six semesters). It covers various aspects of computational theory, programming, algorithm design and optimization, network and database management, mobile technologies, electronics, mathematics, probability, statistics, accounting, finance, etc. This post graduate course prepares you to meet high-end complex demands of the IT industry. With a master's degree in their hand, you can get a job as Software Engineer, Software Consultant, Network Engineer, Database Administrator, Programmer etc. Institutes offering MCA in India are IIS, JNU, NITs etc.

Actuarial Sciences: For those with a love for numbers and finance, you can study to be an actuary. As an actuary, you will be

evaluating financial risk in order to manage and advise clients. Combining risk analysis skills with in-depth knowledge of economics and business, actuaries are at the heart of business strategy, ensuring sound investments are made and commercial/business goals fulfilled. Actuarial roles can be client facing, as with consultancies and pensions/insurance companies, and all actuaries will require the skill of communicating complex data and analyses to non-specialists. Interesting as it sounds, being an actuary requires great amounts of commitment and passion for the subject. It requires you a clear set of examinations, starting with the Actuarial Common Entrance Test (ACET). The exams are based on math, statistics, insurance, economics, and finance. The exams are held by Institute of Actuaries of India (IAI).

Analytics/Decision Sciences: For those with an interest in numbers, finance or business, analytics is for you. As an analyst (business, data or financial), you'll primarily use data to draw predictions for future trends of the company. You'll be tasked with managing, collecting and arranging data by means of surveys, experiments and contextual analysis. With your findings, you may advise clients/colleagues on possible strategies, for example in order to make good financial decisions to further business goals. This field is closely linked to Operations Research, Statistics, and even Game Theory. To enter analytics, you can take a job directly, or supplement your credentials with a software skill training or MBA Business Analytics. In India, the IIMs, ISB and NMIMS offer Analytics.

Shrishi Agarwal, 3rd year



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MATHEMATICS STUDENT VISITS ALL S-BAHN STATIONS IN BERLIN BY FASTEST ROUTE

Mathematics student Loes Knobben recently managed to visit all S-Bahn stations in Berlin in the fastest way possible, namely in 15 hours and 4 minutes, a new record. In order to achieve this, she programmed a mathematical tool in which all stations had to be visited at least once and where all connections had to be ridden at least once as well. Her tool eventually provided a travel plan which, despite a heavy storm, in practice would be 1 hour and 57 minutes faster than the previous record. At every station she took a picture as proof. The record attempt has been submitted to Guinness World Records, for an official mention. The 23-year old student is currently working towards a master's degree in Applied Mathematics at the University of Twente. She performed the task together with her internship company Zuse Institute Berlin, a research institute for applied mathematics. The mission seemed simple: Find the shortest possible route to follow to visit all 166 S-Bahn stations in Berlin, over a distance of 331.5 kilometres. Knobben seized the challenge with both hands and started to programme a tool that showed the fastest route. The input required was an overview of the network and a timetable of departure times. Record attempts in public transport are very popular in several cities, for example in London and New York. Theoretically the tool could be used for other cities as well.

The shortest route

The programme designed by Knobben uses a network representation in the form of a graph, in which the entire timetable is being considered. Subsequently, the graph is converted into a travelling salesman problem via various mathematical transformations, a well known problem in mathematics where various methods of solution are available. "The result of this is the eventual travelling schedule," according to Knobben. "I used this programme

for the S-Bahn in Berlin, where we set the requirement that all stations and all connections have to be visited at least once. If multiple parallel lines exist between two stations it is sufficient to only use one of them. When determining the eventual schedule I also took the minimization of the odds of delay and the amount of delay into account, as the S-Bahn is not exactly known as a system that always continues to run on time. For that reason several back-up plans were made for risky transfers."

Setbacks

After months of preparation it was time for the attempt on 10 January. Together with colleague Isabel Beckenbach and two other interested people, Niels Lindner and David Kretz, Knobben went on her way. They started at Strausberg Nord station and finished at Erkner. The travel plan the tool provided was 3 hours and 17 minutes faster than the previous record, but because of a heavy storm the company was severely delayed. "The most realistic travel plan that we had calculated for the record attempt would take 13 hours and 44 minutes, but if we were lucky and managed to make a difficult transfer it could even be possible in 13 hours and 24 minutes. The first 7 hours went exactly according to schedule, which led me to believe that if the weather is good the entire schedule should be possible. Now we had to wait for a long time at many stations and take detours because many trains didn't go and some parts of the tracks had been closed due to the storm. Next time it would be great to also optimize the weather. In the end we managed to do it in 15 hours and 4 minutes and that's still a new record," says Knobben.

Shrishi Bhogal, 2nd year

THE YEAR THAT WAS

THE 21 ST ANUPAMA DUA PAPER PRESENTATION

The 21st Anupama Dua Paper Presentation was held on the 13th of February. It marked the official beginning of our very own annual departmental festival, aptly named "Enigma". Every year, the department organizes this event to honour the memory of Anupama Dua, an exceptional and dynamic student of our department, who left for her heavenly abode too soon, leaving behind a lasting legacy. The event began with a solemn prayer song by the first year students, followed by an address by our HOD Mrs. Bhavneet Kaur, who declared the event open. Anupama Dua's parents, who have lovingly started this initiative in the memory of their daughter, then gave away the scholarships and awards to the students who performed exceedingly well academically. The paper presentation followed soon after. Most students from all years had actively taken part and were keen to present their papers, which they had worked hard on. The year saw a very good number of presentations, 13 in all, ranging from the golden rule, tessellations in art, the cardinality of real numbers, and even the perfect murder. The students very confidently presented their ideas, and proved to everyone that Mathematics is truly all around us, and can be applied everywhere, even in cutting a cake, which one presentation clearly proved! All of the papers were both informative and really interesting, and the whole event was well appreciated by all. The paper presentation concluded with all the guests and faculty watering the tree that had been planted many years ago in the college compound, to honour the memory of Anupama. The tree is thriving and in full bloom, just like the wonderful legacy she has left behind, and ADPP embodies that very legacy.

Devika, 1st year

ENIGMA



SHERLOCKED

SHERLOCKED was one of the main events organized by the Department of Mathematics of LSR in its academic meet "Enigma" 2015. As the name suggests SHERLOCKED involved lots of decoding and brain storming exercise. It was the murder mystery of the missing professor XYZ. Dr. Watson got married and he is not working with Sherlock anymore, so to solve the mystery the great Sherlock Holmes needs two assistants. To select two most suitable assistants Sherlock Holmes gave them three problems to check their speed, accuracy and the ability to work in difficult situations. The hunt started with the thrilling trailer of SHERLOCKED which showed candidates the seriousness of the situation. Then started the first round - Break the Enigma, with 25 teams from various colleges, the excitement was palpable. In the first round, the candidates had to solve

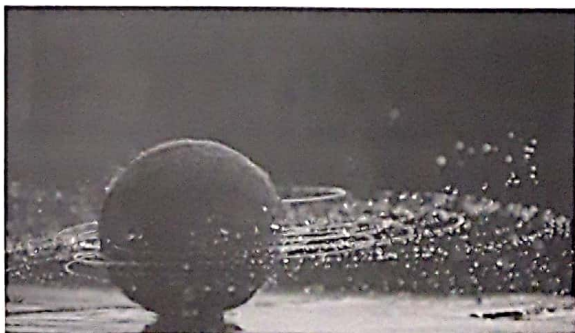
14 problems in 30 minutes. Round 1 analyzed their coding and decoding skills. After these thrilling 30 minutes, 10 teams were selected from the first round out of 25 teams. Then started the second round "Race against time", that analyzed the speed and accuracy of the candidates. In this round, teams were asked to solve 20 questions in 15 minutes. The excited set of teams started round 2 with great momentum but slowly it turned into nervousness. After the round 2, Sherlock Holmes "Sherlock?" which was the last part of the great search. Round 3 was the most difficult and exciting part of the event, in which the ability of the teams to perform together was evaluated. In the round 3, teams of two were separated and were given true-false questions. After solving those questions, each member of the team got one number and after showing that they were given a part of the question, the other half of the question was given to the other member of the team after showing their number. After that, they had to solve it together to win the title. The winning team was from Netaji Subhas Institute of Technology.

Deepika Saini

NUMEROLYMPIC

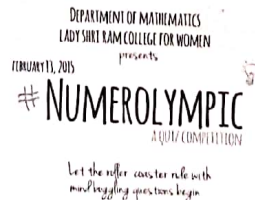
How would you shorten a line without erasing or touching it? By drawing a longer line besides it! In the same way in order to compete and win you have to try and perform better than the other. Instilling the quality of competitiveness was the objective of the Mathematics Quiz 2015. The Mathematics Department of Lady Shri Ram College organised an inter college quiz competition as part of their department event ENIGMA 2015 on 13 February 2015. The quiz consisted of four rounds. The first round was a "Riddle" round where tricky questions had simple answers. This was followed by the "What's the word" word which consisted of Crossword, Mathematical graphs and a fun game Taboo. Tangrams were also played which though were simple but made the brains tick and proved to be harder than the participant's imagination. The concluding round was "Rapid Fire" round when every second was countable and thoroughly valuable to the participants. The quiz was judged by Dr. Mathur, a passionate and inspirational mathematics teacher and Mrs. Uma Versha Kakar, an exuberant, highly knowledgeable teacher and senior member of the Mathematics faculty at Lady Shri Ram College.

Anika Jain



flawless symmetry. The competition was judged by Dr. Venkataraman who has a passion for bird photography to her credit. Aastha Bhatia from Lady Shri Ram College was declared as the winner with a stunning photograph showing rotatory motion in water particles around a spinning ball. Yet, at the end of the day, everyone will agree that it was Mathematics that won.

Srishti Agarwal, 3rd year



CLICK-O-MATH

CLICK-O-MATH, a Photography Competition was conducted by the Mathematics Department under Enigma. The theme for the competition was "Math Is All Around Us". The competition was opened to college students across courses, across colleges, across cities. The event saw enthusiastic amateur photographers sending in their entries. A large number of these entries were sent by students within University of Delhi, photographers from Bangalore and Chennai (among others) too demanded attention. Each picture was unique in its interpretation of the theme. Some chose to highlight beautiful geometric shapes and patterns, while others left us spellbound with



Our beloved Dr. Meenakshi Gopinath demitted office in August last year. Her contribution in Institution's multifarious academic and other activities spanning over quarter of a century, has been immense and noteworthy. Her tender touch of love, a pat on the back, it was a salubrious moment whenever she was around. The indelible imprint that she left on our lives will never fade. She left an everlasting imprint on all of us, to emphasise this fact the corridors of legendary LSR building speak.

मेरा हमसफ़र

आजकल बड़ा कोलहल है - मेरे मन में, बेचैन हूँ, भिद्यत हूँ। ये मैं हूँ? LSR का प्राण, ये दीवारें! ये खम्बे, ये गलियारे, ये कक्षाओं के समर, ये cafe, ये वृक्ष, और इस जगह का कोना-कोना, वो हूँ - मैं, जो हूँ मैं, मैं हूँ - "मेरे हमसफ़र"।

आजकल रातों में, बड़ी फुरसुतवाह सी रहती है रात भर, लपटा है - बाते करती है ये दीवारें, ये खम्बे, ये गलियारे। जो गवाह है - आरम्भ से आजकल के समर की। मैंने देखा है, उस 18 वीं की जल्द लड़की को - यहाँ आती हूँ, अपनी विधिशिखित मुस्कुराहट से, अपने जोस से, अपने उरसाह से, इन कक्षाओं को जीवित बनाते हुए।

मैंने महसूस किया है, उस जिंदगी की, उस आत्माविद्या को, उनगे आकाश को पूरे होने की ललक देखी है मैंने। मैंने देखा है, झरने के जे - सा अपने ज्ञान से सरसाते करते हुए इस प्राण को, मैंने देखा है, हर एक नई मजिल की ओर बढ़ते हुए उनके कदमों की। मैं साक्षी हूँ उनके निखरते हुए व्यक्तित्व निर्माण की, मैं और "MG" सहायरी है, हमसफ़र है - न जाने कितने को से।

मैंने अपने बारे में सोचत छोड़ दिया था, कोई थिंता ही न थी। और हो भी क्यों, जब आपके दिलके रसमों की माला कुन्ने और उन्हें साँस करने को। कोई अपना सा, अपना ही रस हो। अब आप ही बताइए - क्या मेरे कृप्य की हलचल रचनात्मक नहीं? मेरा सहाय्यी जाने के लिए तैयार बैठा है।

मैं, जिनसे आदर है - उनके स्वर्ण की, मैं, जिनसे आदर है - उनकी मोती सी आवाज सुनने की, उनके पदचानों की, उनके आदेशों की, उनके अप्पेन की, उनके महसूस की, उनकी चुप्पी की, उनके गम को। मुझे बहुत हिमत चाहिए ये सही करने के लिए - कि मेरा हमसफ़र, मेरा खीरवाह आ रहा है।

काश! कि मैं पड़ी की इन सुंदरों को लेफ पारी, जो कहते हैं कि वो आ रहे हैं, उन्हें बता पाऊँ, कि मेरे पास उनकी यादों की पोथी है, जो इस प्राण में, इन कक्षाओं में, इन गलियारों में, इन दरों - दीवारों में, उन्हें हमेशा जीवित बनाकर रखेगा।

मनो की, ऐसा महसूस होकर है - जैसे आकाश आ रही हो इस हृदय के कोने - कोने से - तुम्हारी ना आओ, तुम्हारी ना आओ।

- भोजिका सिंह

I AM WOMAN

Throughout history women have assumed or been assigned various social roles, no one had given her liberty to assign those roles which she wants to.

Medieval India was considered as "Dark Ages" for Indian women, one reason for decline in the status of women & their freedom was that original Indians wanted to shield their women folk from the barbarous Mughal invaders. They picked up any women they wanted and kept them in their "harems". Due to this women were not allowed to move freely & this led to future deterioration of their status. These problems related with women resulted in changed mindset of people & they began to consider a girl as misery & a burden, which has to be shielded from the eyes of intruder and needs extra care whereas a boy child did not need such extra care but instead will be helpful as an earning hand. Thus a vicious circle started in which women were at the receiving end. All this gave rise to some new evils such as child marriage, sati, jauhar, purdah & restriction on girl child education.

During modern period, there was little development in the status of women. There were many women reformers in India who worked for upliftment & betterment of their counterparts. However, problems such as dowry, domestic violence, sex selective abortion, female infanticide were prevalent and are still continued. In India women were never given any right of liberty & equality, they have always been treated as the sole property of her father, brother or husband, not been given any choice or freedom of her own. So the question arises do we exemplify ourselves as "liberal women". No, because we are not treated equal in every sphere of our life. Although we have accomplished a lot but still we have a long way to go.

Now, it is crucial to focus on women's ability to maintain their equality & argue that society holds the false belief that women are by nature less intellectually & physically capable than men. Encourage women to use their voices in making decisions separate from decisions previously made for her and deny that women are by nature more pleasure seeking, because if men were confined to the same cage that trap women, men would develop the same flawed characters.

We will be called as "liberal women" only when each & every women's legal, economic & social equality will be as important as that of men, when each & every women will have her own identity, she will be free from any blockage in her path, when she won't be confined within the four walls of the house & when each & every women will be privileged with equal rights, liberty & dignity, then we all can proudly say that, Yes, I am a LIBERAL WOMEN.

Megha Yadav, 3rd year



CAN ANIMALS COUNT?

Around 60 million years ago, lemur like primates had evolved and about 30 million years ago monkey like characteristics existed. But could they count? The concept of counting amongst animals is a contentious issue among animal behaviour experts. But they probably do have a sense of numbers. Rats have been shown to count by performing an activity the correct number of times in exchange of rewards. Chimpanzees can press numbers on a computer that matches the number of bananas in a box. Tetsuro Matsuzawa of Primate Research Institute at Kyoto University in Japan taught a chimpanzee to identify numbers from 1 to 6, by pressing the appropriate computer key when she was shown a certain number of objects on the screen. Counting facilities have been reported in squirrels and pollinating insects.

A few can be trained to tap out the number of elements in a visual pattern. However, the lack of the spoken numerical and the written symbols make many people reluctant to accept animals as mathematicians!

Esha Saha, 1st year

POSITIVITY CREATES HAPPINESS

Positivity is a phenomenon of thinking every mental statement with a positive attitude. Positivity in any case makes the person happy and helps him/her to keep calm. Positivity also implies the process of choosing positive emotions and thinking good and affirmative thoughts. It is the way to use our minds to reverse the damaging effects of negative thinking. It fills our lives with possibilities and solutions instead of worries and obstacles. It has countless benefits on our mental and physical health.

It is so hard to continuously be exposed to negativity and maintain positive outlook on life. We are affected by what we take in, what we surround ourselves with and what we allow into our minds. Positive emotions like joy, gratitude, contentment, encouragement and inspiration, if regularly experienced, create an upward spiral helping us to build our resources that lead to happy lives. Although we need to be realistic about life's ups and downs, positivity helps to focus on good aspects of any situation – the glass half full rather than half empty. Now, ground breaking reality based on scientific work shows that positive emotions have the effect of broadening our perceptions in as much the way as the negative emotions narrow them. The broadening helps us to see more, respond more flexibly in new ways and be more creative. It makes us open to different ideas or experiences and we feel closer to more trusting on others.

There is a strong connection between individual's mindset and his well being. The feelings of fear, doubt, hatred, anger, contempt, depression etc. cause unnecessary stress. On the other hand positivity helps us to foster thoughts that evaluate our minds, throw more constructive light on difficult situations and colour your day with brighter and more helpful approaches to the things we do. By adopting positive outlook in life we can set the course for a better future. So smile! It is contagious. Be thankful, helpful and kind. Have fun, Meditate, Workhard, Never give up and above all, have faith in yourself.

AKANKSHA, 2nd year

Culture Shock: The Multi-stage Process

"Friday, September 12th 2014: In exactly 48 hours, I will be on a red-eye flight from New Delhi, India, to London, England. And I am not going to lie...I am terrified; and thrilled." This was the first sentence in my London journal that has now become my only honest window into my feelings and experiences during this year. At our orientation session on our first day at City University, London, our professors explained to us how the international students would all go through the several stages of "culture shock".

Stage 1: The honeymoon phase

In my opinion, this is the best phase of culture shock. It is the stage of earnest shiny-eyed excitement of being in a new country halfway across the world. Within the first week, I had walked up and down Oxford street more than a couple of times, taken several photos of the Big Ben, seen the city from up above on the London Eye, attempted (and failed miserably!) to distract the Buckingham palace guards, cycled to Hyde Park on a chilly Sunday morning and sat quietly on a bench of St. James Park watching the swans in the pond. Although all the muscle pulls, backaches and blisters were absolutely worth it.

Stage 2: The frustration phase

For me, this stage set in ten minutes after walking into my new room and discovering that the toilets did not have water jets but only toilet paper. This phase encompassed confusion at the fact that coins are actually pretty valuable here, paired with the inability to tell the different denominations apart, which forced me to carefully examine every coin before paying the cashier. It consisted of the irritation that came with my mind invariably multiplying every pound that I spent with a hundred: "Did I actually just pay 300 rupees for a cup of tea???"

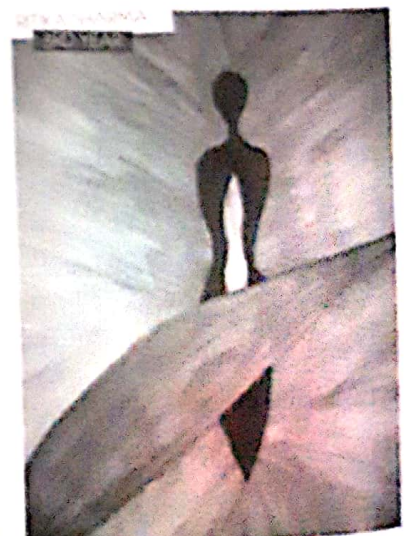
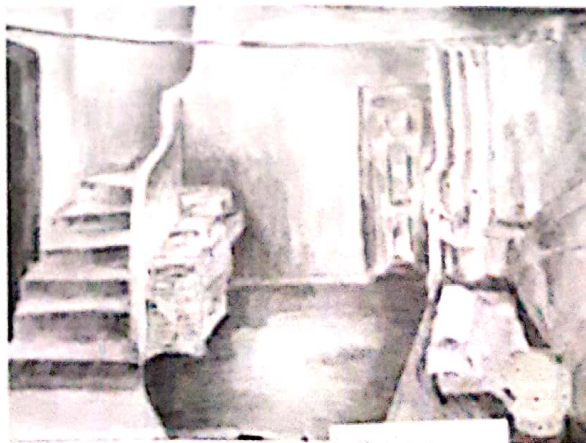
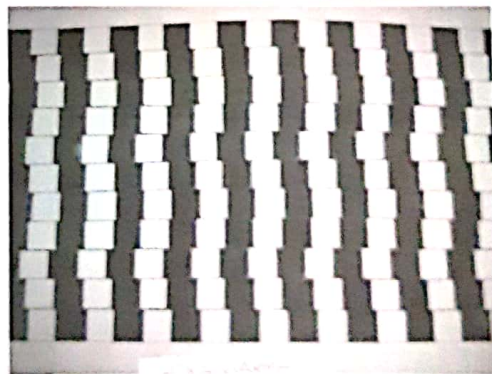
Stage 3: The I-have-it-all-figured-out phase

Once you get out of the grumpy stage 2 of culture shock, you start to feel like you are the master of your new country and have everything figured out. At this point, when tourists would ask me for directions, I could sometimes vaguely gesture in the right direction. I knew the names of more than five major streets in the city and I could confidently and swiftly use coins while paying! This stage was also pretty grand because I was bursting with self-confidence and I would often catch myself smiling inevitably and thinking to myself "I'm actually doing this!"

Stage 4: The acceptance and assimilation phase

I entered fourth and final stage of culture shock during a friend's visit to London. Since it was her first time, it was my job to show her around. I felt anxious. There is a palpable fear to living in a new country, and though it is more acute initially, it never really evaporates. The feeling of being terrified in the beginning that was concentrated on how you're going to adjust and make new friends was now more about "Have I really settled in? Do I really know the place well enough? Do I belong here?" But all of those questions were answered during my friend's stay, where to my own surprise I was quite easily able to be her official tour guide. And that's when I thought to myself, "I really do live here, now!"

Anisha Juneja
Batch of 2014



MATHEMATICAL HOROSCOPE



AREAS (Mar 21-Apr 19)

Today a close friend who has let down her boundaries will have a dilemma. Though you have several axes to grind with her, you should not let this be a factor. If she can count on you, you will get closure.



TORUS (Apr 20-May 20)

Today you will be in your prime. A clique of friends will give you a ring and hold an enjoyable function. You will feel connected to this circle of friends, and will be the center of attention.

M and I (May 21-Jun 21)

$$M + \sqrt{-1}$$

Today you will get a visit from an ex, though you won't know why. The bad boy is still square, a real number, quite a character. He will feed you a line about being a pair again, and this will cause an argument, making you tensor and tensor.

ANSWER (Jun 22-Jul 22)

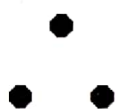
$$x = ?$$

Don't commute today. If you go by plane, the floor will drop out. If your mode is by car, you will hit a field of trees in the median. Even walking on your own digits will result in a funeral plot.

$$e_o$$

E-O (Jul 23-Aug 22)

Today life will throw you a curve. You and a loved one will diverge, and the distance will feel empty. Though you will see her less, her existence proves your perfect friendship is in a separate category. Don't let it make a difference.



ERGO (Aug 23-Sep 22)

On the surface, today will seem like an irrational day, continuously full of problems. The constant chaos will be far from ideal. But the day will be less negative and more normal than it first appears. Stay to your regular routine and minimize variation.

$$\bar{e}$$

E-BAR (Sep 23-Oct 22)

Today you will intersect a radical from class, a tan gent of average height. He will be a cute guy, but obtuse. Help him by reading his abstract, so he can get his degree and reach his proper rank.

$$20\pi_o$$

SCORE-PI-O (Oct 23-Nov 21)

You have reached a critical point in your life. You are on edge and have about reached your limit. This minor identity crisis has kept you in knots for some time. Seek a group of solid friends to set things right.



SLANTED-AREAS (Nov 22-Dec 21)

Today you should stay in bed and catch some Z's. Stay horizontal and sleep like a log. This complete lack of activity will mean a minimum of stress, but it is also a product of the power you have.



CAPRI-CHORD (Dec 22-Jan 19)

This period of your life will be similar to one year ago, when your life was simple and ordered. It is integral that you be careful, lest you do commit an improper error. Look for a sign, but stick to your roots.



A-SQUARY-PLUS (Jan 20-Feb 18)

Keep an open mind today. Stop projecting and admit the magnitude of your problems for a second. If you are analytic, the origin of your exact difficulty will soon be clear, and your troubles will decrease by half.

$$\pi c^2$$

PI-CEES (Feb 19-Mar 20)

Today will be an odd day. You will face many complex problems, all equally frustrating. But you will maximize your joy by finding value in all of them, and it will turn out to be a fine day.

www.2stelson.edu/~efriedma/horoscope/

TOP 10 EXCUSES FOR NOT TURNING IN MATH HOMEWORK

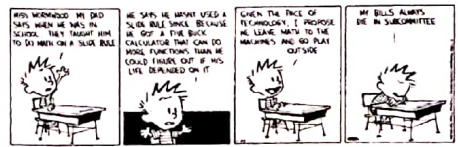
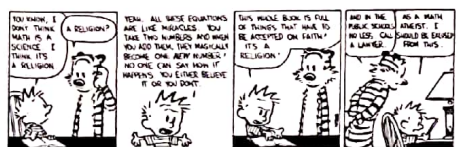
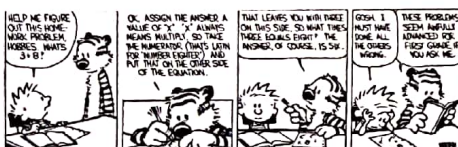
- It's Isaac Newton's birthday.
- I couldn't decide whether i is the square root of -1 or i are the square root of -1 .
- I accidentally divided by 0 and my paper burst into flames.
- I could only get arbitrarily close to my textbook.
- I had too much pi and got sick.
- Someone already published it, so I didn't bother to write it up.
- A four-dimensional dog ate it.
- I have a solar calculator and it was cloudy.
- There wasn't enough room to write it in the margin.

DID YOU KNOW?

Iranian-born mathematician Maryam Mirzakhani has become the first woman to win the Fields Medal, the most prestigious prize in mathematics. Three other researchers were named Fields Medal winners at the same ceremony in South Korea. They included Martin Hairer, a 38-year-old Austrian based at Warwick University in the UK, Manjul Bhargava, a 40-year-old Canadian-American at Princeton University in the US and Artur Avila, 35, a Brazilian-French researcher at the Institute of Mathematics of Jussieu in Paris.



MATH FOR LAUGHS



SOMETHING FOLLOWS HER

A girl is living a teenage dream with her best friend but things have changed no one speaks to her and her best friend staring at her, but her best friend has something to tell her which could change everything. Why it's always there when I come back from school? It's like it follow's me home. I feel like I'm constantly being stalked in my own home, they say stuff like this is insane, not natural but strange. Well this has been my natural life for two long months now.

Every day I would wake up and see nothing it's like it's gone everything that scares me and haunts me, just empty, totally disappeared. So I have this friend called Sam. I tell her everything, well everything except me being crazy. Sam came up to me as always. She isn't like most girl's she's totally funny, short brown hair, wears cartoon characters quite stylish if I must admit, she is a person to tell all my treasures to, all but one. Sam has started to seem different maybe she's noticing something, something out the ordinary about me. Well I couldn't blame her she's my best friend, but I don't like hiding something from her, how would I explain it? Do I say oh Sam I'm being stalked after school at my own home? Anything I say would make me completely and utterly bizarre. What if she decides she doesn't want me as a friend anymore? These questions are gathering up inside my mind waiting to set free and explode my brain. I'm lost in my own body and can't feel myself. "Hello are you there?" She whispered to me. So confused at my own reactions in all my worries, "Sorry Sam, is it okay if I talk to you later I have my math calculations and really need to catch up on them". I hope I didn't sound mean or anything. I don't want to hurt her, but I don't want to lose her either.

Who would believe that things could be so stressful? Well apart from things being so unreal, so unpredictable. All I think about is if I'll see that...thing, that stranger in my house tonight. Every time I see that thing, the room just goes so bright it's like thousands of stars that

one's see in the night sky are all just in one tiny small box room. Everything around me just feels so warm as if I'm being suffocated with blankets and jumpers and hugs and it's unbearable. It smells so... pains so as if air is smothered in all the scent and dragged away with the wind. It's like it wants me, it wants to take me away and leave nothing but a piece of air that would only be enough for a tiny gasp. What does it want? Why me? Can't it leave me alone? Woo there goes the bell great. "You need to see something", Sam came to me like a lion for its prey. I have never seen Sam so disappointed so fierce so brutal. I'm seriously considering talking and explaining all to Sam. "Sam calm down no one at home yet, slow down". What was wrong with her? Did I get her that mad that she didn't care in the world what I was saying? SAM PLEASE What's wrong? You are scaring me now! She didn't turn round to stare it's like she didn't even consider once just to listen to me anymore. We got to the point where Sam was getting out of breath from all the fast walking. We were nearly home it meant. "Look you need to listen and listen", Sam interrupted me as I was thinking. What was she trying to get at? She was staring blatantly through me, as if she could see my thick bones, my red blood. "I waved it's being so hard trying to deal with this but you need to know I'm really sorry I don't know how to put this but... You're not real!!". Speechless, I don't understand how she can be so hurtful? SAM!! I can't describe what just happened, but the sudden rush was weird. Sam just walked through me as if I was a thin piece of air, a gap through the tightest squeeze. "Give me the money" I remember the dark face man shouting at me, I'm not going to ask you again so give me your money and I won't hurt you. What's going on? All flash backs coming to my mind. The knife, the stabbing, the pain, the strength of useless nothing. Why couldn't I remember I died?

Srishti Bhogal, 2nd year

INDIAN INSTITUTE OF SCIENCE: A PLACE OF MY DREAMS

From the beginning, my sole aim was getting into The Indian Institute Of Science. It is called the top research institute for a reason. A semester has gone by and I feel I have learnt so much in that semester. In the very first semester I got to learn the same subjects that we study in under-graduation, but in an entirely different way. What we presumed to be isolated subjects were interlinked and it helped me get a clearer picture of many concepts. The faculty and students are very friendly. We also have the liberty of attending any class in any department, other than our prescribed courses. All in all, the institute provides an environment to learn Maths in an entirely new way. As far as my preparation for JAM, I didn't explicitly start my preparation before December 2013, that is, a month and a half before JAM. But what is required is a continuous work in all the three years. One has to be clear about the concepts from the beginning. This is not merely for JAM, but this is very essential once you clear JAM and get into IISc or IITs. Even the smallest of the facts are an essential part of very important theorems.

Once you are through with JAM, and your rank is good, then comes the interview round of IISc. This is something which you cannot prepare for because in the interview, you have no idea what they will ask. My interview lasted for an hour. There were five to six professors. What they usually do is ask you to list your preferential subjects. But they will definitely ask you a question from real analysis or abstract algebra. The usual way is that there will be one question which they hold on to and they will keep making changes in that question to see how well you know it. For instance, I can recollect one of my questions. They asked me if a bijection from $[0, 1]$ to \mathbb{R} (real) was possible. Well, this was not possible. They then continued with this question, changing the interval, taking the inverse map, asking me to predict the graph.

I am glad that I was able to send in my feedback in some way. I remember being clueless about how to go about preparing how to handle the interview. I hope this article was helpful in some way. Needless to say, if any of you needs any help, you can always contact me.

Sruithi Sekhar, Batch of 2014

Lady Shri Ram College for Women, a name that reverberates in the minds of all us young ladies, striving to be a part of the brandishing culture that this college boasts of. This college, which is now ours. All us newcomers, come with our own set of aspirations, insecurities and a hope to both fit in and stand out. The first month is mostly about acquainting oneself with the place, the subject, and the people. It is also during the same time that we get an insight into the various learning opportunities that exist in the form of Societies. Dance was one thing that I'd been passionate about since the very beginning. However, it got a bit sidelined in the past two years due to other commitments

and work that I signed up for. The aura of our college's dance society reignited my love for dance and made me want to explore and learn more in the field. I was one of the many students who auditioned, and after two rounds of screening, amongst the few who were chosen to be a part of the Choreography Wing of the Dance Society. All newly chosen members were extremely overwhelmed. Our Journey with the society began with an Informal Orientation with the seniors, who told us of the commitment, discipline, and sincerity that the society demanded. Practices started from the next day itself, going straight from Monday to Saturday. Being new to the concept of spending almost 12 hours outside of home, and having to give explanatory reasons to be able to miss practice, all of us seemed to be cribbing more than enjoying, thereby defeating the purpose of indulging in recreational activities. The first few weeks, were just about working out and trying to get to know each other. Despite the repeated assurances and support of our seniors, as new members we often criticised the functioning of the society and it wasn't until the end of September that came to terms with what was and had been happening. October was more light hearted and enjoyable as we now had a fairer idea of where we were headed and made some good bonds. With our production in place, bodies more trained, we visited BITS Pilani towards the end of October for our First Fest. That was a turning point in our lives. The team bonded with each other in a way we hadn't imagined. From helping each other get ready, to de-stressing each other for a performance that was to happen after a day's journey and 48 hours of no sleep, we experienced a part of each other that had remained hidden until then. All the hours that had gone into preparation suddenly seemed to make sense. And we returned not just as winners, but most importantly as a team, a team that was willing to give it all their strength and might now. The love had increased to an extent that it took us a long time to zone out of Pilani mode and get into our study modes so as to be able to ace our exams as well. The first day of practice after exams was like a reunion of family members who'd been forcefully separated. Practice, no matter how tiring, was something each one of us looked forward to. The transition from criticising about practice to waiting to get back to it, was exemplary. In fact, the learning increased manifold, as we started feeling a sense of belongingness. Besides, the mutual respect that we shared was inspiring. We hit the stage of IIT Bombay next and since we did not win this time, it had its own share of learning that came to us. Occasionally when we were given an off from practice, we refused to go back home and preferred to spend all that time in each other's company. Such was the bond. Taring time opened more doors for learning. Getting sponsors, organising the whole event, handling teams and registrations, that was an exposure in its own way. And as I grow close upon to the end of our year, I look back and realise how blessed I was to be a part of this society, where work is so interesting that it's play, the place so full of warmth that it's second home and the people so full of life and love that they are now family.

Mansha Sachdev, 1st year

DILEMMA OF COMPLEX NUMBER (I)

I am trapped in the world of complexities. When will I be considered in realm of realities? I am suffocated to death in my world, which is imaginary. When will I be considered a real being in reality?

For resolution of my problem, I went to Mathematical Court of Justice(MCJ). They said, "All you need is the tools of our subject algebra, arithmetica. And your identical twin sister *iota*, who had the same fate as yours, another *iota*. So, I searched and got my sister *iota*, the fastest.....

But my worries didn't cease to exist, what if I can't find my arithmetic and algebraic friends. All my labors will be futile without my intelligent mathematical friends. I will remain trapped in my depressing world of complexities. And I will never see the sunshine and heavenly reality.

I searched and searched for them day and night. But after a while, I thought they will remain out of sight. But then I finally saw Diophantus and Khwarizmi (fathers of algebra) in dream. Who told the location of our friends regime. I met my friends, mingle and waltz with them down to the way of arithmetic and algebra. Who set me (*iota*) and my sis (*iota*) free by breaking our imaginary and complex bounds. So, even if we (me and my cool sis) became the negatives. But by the grace of Lord and MCJ, at least we became the reals.

Shambhavi Gupta, 3rd year

INANIMATE NUMBERS AND ANIMATE HUMANS

Welcome to the inanimate world of Mathematics. Where we see mingling of numbers of different characteristics. The Irrationals, The Rationals, The Imaginary. The Reals etc.

Such is an unprecedented nature of this discipline. Where The Irrationals can be converted to The Rationals. Where The Imaginary can also be transitioned into The Reals.

Here all the different beings dwell in perfect harmony. Where no number dominates the other unnecessarily. So, this is the beautiful, inspiring world of numbers famous for their brotherhood and fraternity.

Now, enter our animate world of humans. Where discrimination is done on basis of caste, creed, sects or other divisions. The Hindus, The Sikhs, The Muslims, The Christians...

How surprising is our world. Where people fight within same religions... Where the Rationals, educated behave so Irrationals. Where the Living are no different as the dead.

Wake up World! The World of Rationals and The Living Beings. Please strife and fight to build a world, an abode of harmonious creatures. Even the Irrationals and inanimate beings have learnt to do so. Then why can't you?

Shambhavi Gupta, 3rd year

CONNECTING TO SAVE LIVES - BLOODCONNECT

"You have only 12 hours", said the doctor. Ananya was shattered. The doctor had concurred to give her 12 hours to arrange for O- blood, to save her friend, Priya. Memories of Priya ran in her mind as she re-collected past 3 years she had spent with her in the hostel. As Ananya regained her senses she realized that O- being an uncommon blood group, an universal donor was to be sought by her. She contacted every single soul she had known in the past three years of her stay, in New Delhi. But it being 1st January, 2015, the universal donors she found could not donate blood because they had consumed alcohol within 24 hours. "Hey! Why don't you contact BloodConnect?", said one. Ananya had no time. She dreaded to think what would happen if this also didn't work. She googled BloodConnect and raised a request on www.bloodconnect.org. "Good evening madam, I am Ruchi from BloodConnect. You raised a request on our website", a voice that gave her a sense of relief.

Blood cannot be manufactured in factories. It can only come from generous donors. To cater to this demand, BloodConnect was launched on 1st April, 2010 (as a project under NSS IIT Delhi) with an unparalleled objective of solving the problem of blood shortage in India.

BloodConnect is a student initiative which aims to solve the problem of blood shortage in India by providing free help and specially works to target the poor and the needy. Since its inception, the organization has grown a lot in terms of working for this cause. BloodConnect has developed a 360 degree solution to the problem of blood shortage. It has been recognized by Government (DSACS) for excellence in promotion of Voluntary Blood Donation.

The model revolves around 4 focal points

Ensuring continuous, sufficient blood supply to blood banks through blood donation camps and weekly donations

Improving awareness by organizing Street Plays, Info-Talks, Competitions

Helping those in dire need by operating an emergency 24x7 helpline

Establishing a network of youth across the country to lead the movement

To make this possible, BloodConnect acts as a channel connecting voluntary blood donors with those who need blood. Priya is out of danger now. Her surgery was successful solely because of efforts put in by Ruchi in arranging a donor. There are 'n' number of such individuals, like Ruchi who voluntarily work for BloodConnect, learn, appreciate and most importantly, help people by doing their bit towards the society. Now Ananya herself, has sworn to become a regular blood donor.

Be the change, you want to see. "Donate Blood To One, to All"

Patok Gupta, 3rd year

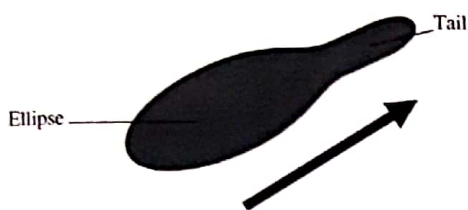
CRIME ANALYSIS

Ever since we were little kids (the good old days!), we have been intrigued by mysteries. We have grown up reading mystery novels and watching crime serials (believe us, CID is still alive and going because of us. But apart from solving the mysteries with Sherlock and failing miserably (who knows what goes on inside his mind temple), what has really baffled us is how a real crime is solved. If you have wondered the same, then you are at the right place.

BLOOD SPATTER ANALYSIS USING TRIGONOMETRY

One of the most important evidence found at any crime scene is blood. When we talk about analysing blood at a crime scene, we usually concentrate our efforts on DNA sampling. But the blood itself, where it lands and the patterns it forms can help us gather a lot of important information. Blood spatter analysis can reveal important information about the crime such as:

1. Type and velocity of weapon
2. Number of blows
3. Handedness of assailant
4. Position and movements of the victim and assailant during and after the attack
5. Which wounds were inflicted first
6. How long ago the crime was committed
7. Whether death was immediate or delayed



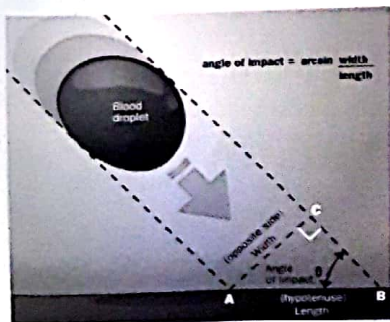
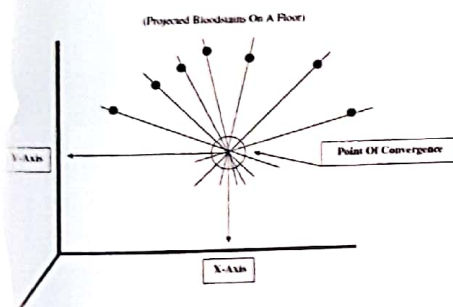
There are three main types of blood spatter that can be found at any crime scene:

1. Low velocity spatter:

These type of spatter are ones for which the force of impact is five feet per second or less and the size of the droplets is somewhere between four and eight millimetres. This type of blood spatter often occurs after a victim is injured. For example, if the victim walks around bleeding, the dripping blood drops are a type of low-velocity spatters. These are known as passive spatters. The other type of low velocity spatter are transfers, which can be the impression left by a weapon etc.

2. Medium velocity spatter:

These are the spatters for which the force is between 5 to 10 feet per second, and its diameter is usually no more than four millimetres. Examples of such type of spatter are spatters caused by blunt objects such as a bat or a fist.



3. High velocity spatter:

These are the spatters for which the force is more than 100 feet per second and the diameter is less than one millimeter. High-velocity spatters are usually caused by gunshot wounds.

STEPS OF BLOOD SPATTER ANALYSIS

When blood is detached from its source, it follows the laws of motion and gravity. It travels in spherical drops due to surface tension. Blood molecules are very cohesive, or attracted to each other, so they squeeze against each other until they form a shape with the smallest area possible. There are three steps involved in blood spatter analysis:

1. Determining the point of convergence:

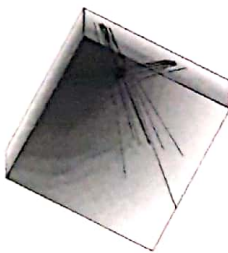
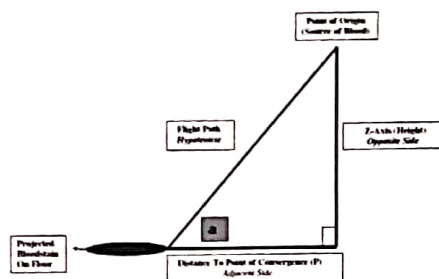
For these 14-20 blood drops are selected. Straight lines are drawing through the major axes of the ellipse. The point at which they converge is known as the point of convergence. It tells us the point at which was attacked. When blood strikes a surface, it decomposes into an ellipse with a tail. The tail indicates the direction of the source. The tail always points away from the source.

2. Determining the angle of impact:

The angle of impact is the acute angled formed between the direction of the blood droplet and the surface it strikes. As can be seen, the sine of the angle is approximately equal to the ratio of the width of the ellipse to the length.

3. Determining the area of convergence:

This gives us the exact region where the crime took place. For this we use the formula of tangent of the



$$\text{Wrinkliness} = \log \left(\frac{\text{boundary_in_high_res.}}{\text{boundary_in_low_res.}} \right) / \log(2)$$

HANDWRITING ANALYSIS USING FRACTAL DIMENSIONS

Mathematics is one of the best handwriting experts. We can determine whether handwriting has been forged using fractal dimension analysis. When we sign our own name, we do so quickly and it minimises the time of contact between paper and pen and hence our handwriting has a smooth edge. When someone is copying our signature, it takes them considerably more time and it increases the time that the pen is in contact with the paper. More ink is absorbed in and hence the handwriting has a wrinkly edge. Fractal Dimension analysis helps to measure this wrinkliness and detect the fake. First the handwriting samples are scanned. Scanned digital images are converted to into simple binary images represented by a rectangular array where each pixel has a value 0 or 1. To measure wrinkliness, the image is viewed at two different resolutions. One can simply count the number of high and low resolution pixels on the boundary of the handwriting and use the following formula for wrinkliness which is given as: where high_resolution is the number of pixels on the boundary of the high resolution handwriting sample, and low_resolution is the number of pixels on the boundary of the low resolution sample. If the writing is a smooth, the wrinkliness value is very close to 1.

Aastha Bhatia and Jasmine Bhullar, 3rd year



IN-DEPENDENCE

A day some 68 years ago
stays etched in my mind
when the brutal British rule
came to a grind.

India rose from the ashes, the time stood still
entry into a new era
people ushered in free air
the moment captured in a virtual camera.
As the clock ticked along
India evolved,
new leaders, new challenges
gradually resolved.

We fought our dreary neighbors
curbed their ambitions
but, in the will to succeed
forgot our traditions.

With the population explosion
grew our demand
the country with its depleted resources
enroute to development, came a withstand.

Decades gone by,
the golden days of yore
the 'sone ki chidiya'; our nation
does not sustain it any more.

Are we really independent
my mind thinks
with millions under poverty line
the government hardly blinks.

Seeing the India of their dreams,
the martyrs weep
to see the nation they won with blood
go down deep and deep.

There is no doubt that
we have made our stride
our land has bred heroes
who proliferate our pride.

But is that copious
to mark our independence
celebrating cricket victories and flying kites
has become a good riddance.

Freedom is not a mere slave
Of the rich and the elite
Every Indian has his right on it
It's a national feat.
Let's all come together
to forge an oath
we will have zero tolerance policy
towards corruption henceforth.

Aastha Bhatia, 3rd year



TIME TO SAY GOODBYE

“So, last year of college, huh? How does it feel?” The feeling has not really set in yet. Crisis averted. I have been asked this question a dozen times now, but it never fails to set free a million butterflies in my stomach. It is less than two months till we graduate, and the feeling has started to set in now. But I fear that I can't answer this question without eventually crying a river.

There is a truth that we all have to face: Everything eventually ends. The final page of a great book, last day of a trip, parting ways with friends. But endings are inevitable. Summer fades into autumn, it's time to return home, you say goodbye.

And now is one of those times for us. It is a time to say goodbye to all things familiar, all things comfortable.

It's time to say goodbye to frappe and muffin. It's time to say goodbye to rooms 16, 26 and 61. It's time to say goodbye to aankh me choli in the front lawns and to photo sessions in the back lawns. It's time to say goodbye to walks to Moolchand (yes, I did walk at times) and metro rides, "sobs".

It's time to move on. All that will remain with us are memories; small clear voices in our heart that will be with us; to guide us, to make us smile, to make us laugh, always. And for those I am grateful.

Blessed to have such great department mates and teachers.

Jasmine Bhullar, 3rd year

#Sem6 Checklist

The three year long adventure of endless ups and downs will now come to a halt for final year students as they embark upon another journey which shall not be the same as this one. Of course, we all have that to-do list for our college life which has been neglected for quite some time now. We always put it aside hoping that we will do justice to it some other day. Well, now is that day and now is that time! Welcome to the last and the most momentous semester at LSR :) I went around asking my fellow classmates "What would they want to do in their last semester?", and here are the answers that I got. I present the dream checklist for Semester 6! Before you leave this amazing place and venture out to explore the rest, here are some MUSTs. Second Years, please take note! Third years, how many of these have you done? As cheesy as it may sound "Ab ki baar, sab karlo yaar"

- Sacrifice winter mornings and get that 100% attendance
- Conquer ANALYSIS (not sure if anybody has done that :P)
- Get the highest possible marks compared to last 5 semesters
- Not doze off during lectures
- Learn something new from the class every single day
- Click endless "awwww" selfies on campus
- Will board the "Dilli Darshan" bus and cross off the MUST SEE places of Delhi
- Explore the trending cafes and eating joints of the city (Special mention: Old Delhi)
- Gatecrash a wedding with friends
- Go on a holiday/trip with friends to a new city
- Attend the Jaipur Literature Festival (JLF)
- Stay for Tarang till late at night!
- Finally embrace library books!
- "Shop till we drop" at Sarojini and Lajpat
- Play some cool games with the department teachers (pretty tough!)

With numbered days remaining, don't rattle your brains that hard. Just go out there and make beautiful memories. Memories that will bring a wide smile on your face when you will be reminiscing about your college days to your grand kids!

Mannat Gautam, 3rd year

बीत गये हमारे ये तीन साल

उछली बत्तख जब हुआ मनेक्शन
कट ऑफ की मारा मारी मे,
आया बुलावा सपनों की नगरी का
"Magic of LSR"

घर में दूर epsilon, theta की दुनिया में
हुए हम बहुत परेशान
पर लेक्चर के अंत में,
"I'll take two minutes more"
ने कर दिया सब आसान

Calculus के बंद दरवाज़े खोल कर,
कराये दर्शन अमली ज्ञान के
कमरे की दीवारों को देखकर,
सोचते हम अपना 3-D प्लेन

Linear Algebra को और आसान बनाकर,
Trendy बैग्स और stylish कपड़ों का मैजिक चलाकर,
बन गयी वो हमारी ड्रीम वर्ल्ड
अध्यापिका के रूप में मौ की परछाई

छोटे से छोटे प्रश्न को बड़ी आसानी से समझा देना,
कम वक्त में सब कुछ सिखा देना,
आखिरी "पांच मिनट में," बस एक last example"
कुछ अपने "perfect notes" के लिए हैं जाने जाने,
कोई notes में हटकर देना है अमली ज्ञान,
सम्पत्ति में पढ़कर लगना है सब कुछ आसान

Assignment में वो लास्ट सीट की मारा मारी,
उस पर teachers की सख्त निगरानी,
हमारी वो "techniques",
कभी न भूल पायेंगे हम ये पल

विभिन्न मांगों में मिलते रहे, दोस्त बनते रहे
यह मिलमिला यूटूबी चलता रहा,
इसी तरह हमने खेलते,
वीन गए हमारे ये तीन साल।

ईशा हर्षिता

VALEDICTORY NOTE

As I stand at the threshold of my college life, staring at the precipice of the gigantic challenge of M.Sc. and jobs staring at me, I'd like to jot down a few points; things that I've always wanted to share about my incredible 36 months that I've spent here at LSR. One's alma mater is always special in its own way. No matter which college you enroll into, there are students around you, some of who invariably enchant you with their antics and make you melt into the fun-o-sphere of campus life, become your partners in crime!

The vagaries of the student life started from the first sem itself, breaking the expectations of carrying stylish bags to college, we had to carry our textbooks in backpacks (curses to KJo for false portrayal of college students!). We resembled the famished Russian soldiers from the Second World War carrying bazookas and axes fighting the Germans but we like 'sudhra hua bacchas' religiously followed every instruction given by our proctors.

After a whirlwind second sem, came the third, fourth and fifth semesters which officially made us seniors. The slugfest with books became fiercer, as analysis became more complex. The non compact syllabus connectedly and completely wratched our otherwise dense brain cell (Read book, Michael O Searcoid, Metric Spaces). Throughout the thick and thin, some friendships started to blossom.

Wo ek ek number ke peeche,
teacher se hui takrar,
wo galat answer par bhi,
attempt ka mark dene ki pukar.
sapno se shuru hua safar,
aaj apni manzil ko aaya hai.

Life moved on, and after the "assignments-assignments- (sometimes another re-assignment)-final term" routines and "yaar, teri attendance mujh se zyada kaise" phase, we finally became the dons of the college. Stepping into third year, the academic jargon became less significant.

Contrary to more study and lesser than expected marks in the first two semesters, the University started a reverse trend of gifting marks from the third year. Completing lab files in a single day and attending soponic lectures where grasping concepts was as challenging as Uday Chopra's acting skills.

Mid sem break was extremely hectic (preparing for 3 assignments in one week) phew...but did get to learn a lot. And then participating in so many paper presentation events throughout the last two years.

I learnt that you cannot judge a book by its cover though a good cover could help you charge a premium. I learnt that halo effect exists, and to break it all it takes is taking that first step. I learnt that it was alright to question everything. But not EVERYTHING man... come on... I learnt that there may not be right answers just right decisions. *

*I lame jokes and erudite comments are the forte of the author, because that is exactly what she has done throughout the college life.

In a nutshell, I explored into many new things in college, ventured into unknown territories, bumped into new people and had an amazing opportunity to network. Yes, all this was interspersed by studying. I had a roller coaster ride all throughout the last 3 years. I'd like to thank all my friends who helped me with studies especially the last minute cramming. Most importantly, I'd like to thank my teachers for their unconditional support.

The last 2 months are under progress, trying to make the most of it. Hoping to meet some of you at the crossroads of life somewhere down the line....

With moisture in eyes, smile on my face and major project on my mind. I sign off.

Aastha Bhatia, 3rd year