Quantum 2009

THE MATHEMATICAL GAZETTE

FROM THE EDITOR'S DESK

CHRYSALIS has matured and the butterflies are all free......and freedom has given them flight. It has been an eventful, bittersweet year-in LSR and outside it.

Our nation was shocked and outraged by the repeated terror attacks in Ahemedabad, New Delhi and then in Mumbai. Our prayers are always with those who lost their lives and the hundreds of broken hearts they left behind. As Indians we are grateful to, and proud of, the NSG commandoes, the Indian Army, and the Mumbai Police force for their exemplary valour and sincerity during one of the most horrifying and harrowing times ever witnessed by the country. These attacks were not on any particular part of the nation but on the very spirit of India. The 26/11 attacks saw the unprecedented coming together of the public from all parts of India to protest the apathy of the politicians and the complacency of the Indian bureaucracy. The people demanded Change. Let us pray and hope that this unity and courage heralds a safer, stronger nation in the coming years under the guidance of the new Home Minister Mr. Chidambaram.

In these times of economic gloom, the colour purple triumphed in a country of obstinate, endemic racial beliefs, and Barrack Hussein Obama created history by becoming the first African-American President of the United States of America. A seemingly upright, honest man, dictated by principles and strong values, the recently elected 44th President of the USA has infused the much needed confidence and hope in a people struggling to survive in perhaps the worst recession since World War II. He has promised Change. And that is what the people anticipate and expect of him.

It has been a year of unexpected glory for India –at the Olympics and at the Oscars, with Abhinav Bindra winning the first individual gold medal and A.R Rahman winning two Oscars. Let's hope the immense talent in India continues to receive the international acknowledgement that it deserves. Team Quantum would like to wish the outgoing batch of 2009 the very best in all their future endeavors.

Read on to find out what the year has been like for the Maths Department of LSR. Any suggestions and contributions will be welcome. Do write to us with your thoughts at – jazab@rediffmail.com. The Team Quantum would also like extend their heartfelt thanks to the faculty for their continued support and encouragement.

I would like to sign off with, what to me have been the most impactful words of 2008. In an election speech, in February the same year, Obama advised---

'Change will not come if we wait for some other person or some other time. We are the ones we've been waiting for. We are the change we seek.'

Let us make this not merely a 'thought for the day' or week or year-but the basis for all the thoughts and actions in our lives.

Jaza Bhavani

HORIZON 2008
<div align="right">

RUSHIL PRAKASH

</div>

The annual Mathematics meet of Lady Shri Ram College for Women was held on 26th September 2008. This year, the LSR mathematics fest was slightly different from what it has been for the last few years, with the addition of informal games during the main event and one more event added to the agenda. The day was definitely a tremendous success, living up to the expectations of the faculty as well the students who had seen the 'horizon's of the year before and the fresher's who were completely new to the idea. The day started off with an interesting and inspiring inaugural lecture by Prof B. K. Das on the Inter Disciplinary nature of mathematics. This was followed by the quiz prelims, which as always were quite tricky and 6 teams got through to the finals. The prelims were held alongside the mathematical rangoli which again proved to be very popular with all the people attending the fest. In fact, we even had to provide an extra venue for the teams since so many people wanted to participate! The team from LSR consisting of Rushil Prakash from 2nd year and Shruti Johari from 3rd year won the quiz, with a team from IIT Delhi bagging the second position, after very close and interesting rounds. The audience also received prizes for participating informally. "What's the good word?", which many considered a more fun and slightly informal way of conducting a quiz was also received very well by the participants and the audience. Dayaneet and Aditi from LSR secured the first position." Tangrams" as always proved to be a lot of fun with participants trying to create the image given with the help of 7 geometric figures. The winners , Sarakshi and Ishani were again from LSR. The new event this year, Sudoku and Towers of Hanoi was an event which many Sudoku enthusiasts looked forward to and the very tricky question did not disappoint. Even the faculty attempted to solve the grid and many were surprised when the six finalists for Towers of Hanoi managed to solve the Sudoku grid in just 10 minutes! Towers of Hanoi is a logical game in which the player has to arrange different sized blocks in the shape of a tower ,keeping certain rules in mind and spectators watched intently while the finalists attempted to solve the game. The winner was from IIT Delhi. The turnout of students and faculty for our fest this year was tremendous and has motivated every one of us to try topping this year's mathematical meet with an even better one next year. This would not have been possible without the help and tremendous support of all the students and faculty, who helped us at every step of the way!

THE FRESHER'S PARTY
<div align="right">

SACHI SARAWGI

</div>

The Mathematics Department has always gone an extra mile in helping their juniors feel at home. Thus, the batch of 2011 was no exception to this wonderful tradition. The Fresher's party was held on a bright and sunny Tuesday afternoon in the month of July, 2008. The theme of the party was "When darkness dawns" and hence, there was immense scope to be creative and to dress-up. The program started with a 'scary' performance by the third year students and a song by Sakshi from second year.
Then, all the freshers were called one by one to the stage to introduce themselves to the entire department. Some girls had dressed up as Dracula and some as Poison Ivy while some of them dressed up in all black. The auditorium was brimming with energy as all the first year students danced to the funky beats of "Pappu cant dance" and then presented a group song. The final five of the Miss Fresher contest were then called on to the stage and were asked to answer a common question. The Anupama Dua scholarship certificates were also given out. Neha Choudhary and Sachi Sarawgi were adjudged Miss Fresher and Miss Best Dressed respectively. The wonderful evening became even better when Monica ma'am sang a song and all the teachers danced with the students .The Fresher's party provided an ideal informal forum for interaction between the new entrants, the seniors and the faculty. The curtains descended on yet another Fresher's Party when everyone assembled in LSR Café for the much needed and much awaited refreshments.

FROM A LIFE OF MATHEMATICS
<div align="right">

JAZA BHAVANI

</div>

A two day seminar, "From a Life of Mathematics" was organized in collaboration with the Mathematical Sciences Foundation in February 2009. Prof. Fitzgibbon (University of Houston, Texas, USA) was the chief guest for the seminar. He delivered lectures on "Mathematical Biology" and "Moore's Method". A number of eminent mathematicians like Prof. Dinesh Singh (Director, South Campus, University of Delhi), Dr. Radha Mohan (St. Stephen's College) and Dr. Geetha Venkataraman (Insititute of Life Long Learning) were among the participants. There was an Inter College Paper Presentation Competition in which students not only from other colleges of Delhi University but also from Banaras Hindu University presented papers. There was also a seminar on "Career Options in Mathematics", in which Prof. Vij (Dean, Students Welfare, University of Delhi), Dr. Parimal Mandke (Dean, Academic Affairs, NIIT), Dr. Prasad Rao (Director, National Technology Research Organization) and Dr. Vijyaraghavan (Advisor, NTRO) spoke about a variety of career options after graduation in Mathematics.
In the Inter College Paper Presentation Competition held during the seminar, Shruti Johari and Rushil Prakash, and Dayaneet Shahpuri and Nikhita Mehra won the first and the second prizes respectively.
The synopsis of their paper presentations are as follows-

Fourier Series(By Rushil and Shruti)

In mathematics, a Fourier series decomposes a periodic function into a sum of simple oscillating functions, namely sines and cosines. It aims at finding an approximation using trigonometric functions for various square, saw tooth, etc waveforms that occur in electronics. This is done by adding more and more trigonometric functions together. The sum of these special trigonometric functions is called the Fourier series. Jean Baptiste Joseph Fourier first devised of his series method while studying the conduction of heat in a medal rod. This shows just one of the many applications of the Fourier series. They are used in the analysis of current flow in electrical engineering. They are used for the analysis of sound waves. They are used in mathematics to solve differential equations. Fourier's ideas can also be found in electronically synthesized music and talking computer chips. These are just a few of examples of the many uses of the Fourier series in the world of science and technology.

Rubik's Cube via Group Theory(By Nikhita and Dayaneet)

The paper attempts to bring to light the relationship between group theory and Rubik's cube, a popular puzzle block. It will be demonstrated how the sequence of rotations of components on the Rubik's Cube will reflect the properties of a group. This connection is furthered onto explanation of subgroups as well.
With the use of group theory, a Rubik's cube can be assembled and reassembled and the paper builds on to explain how it is so.

THE DEPARTMENT TRIP   NIKITA CHAUDHARY, TARUNA GOEL

One of the most awaited activities for students of the mathematics department is the department trip. This year our department trip to 'Desert Trails', (near Jaipur) was an exhilarating experience for all of us.

Our trip officially began in college itself where we, (a bunch of excited and happy girls) had gathered to board the bus to 'Desert trails'.

Our 6-hour long journey was a lot of fun... which passed swiftly by playing 'Antakshari', 'Uno' and clicking random pictures. Just 10 minutes before reaching our destination, we switched off the lights of the bus and travelled through the very dark, spooky, and barren lands of Rajasthan with no signs of civilization around.

We finally reached 'Desert trails' at midnight and really liked what we saw- a beautifully lit place with small cottages and open and free space all around!! We were happier when we saw our own private cottages (of course to be shared by 4 people), a spacious room with tastefully done mirror work on the walls and intricate carvings on the door. After a yummy dinner we all retired to our rooms and slept, in anticipation of the fun we were going to have in the coming two days.

We were woken in the morning with bed tea around 7:30 am. With 4 girls to a bathroom, we somehow managed to get ready by 9 a.m. After breakfast, we began our **adventure activities** which included 'river crossing', 'triangular bridge crossing', 'Burma Bridge crossing', 'rope climbing' among a few others.
Everyone, including our teachers, Ms. Ranjana and Ms.Sucheta were in full spirits to try and complete all the activities.

After two hours of toil, fun and numerous photo sessions, we proceeded to have lunch. So much exercise had made us ravenously hungry and we binged on the food.

After an hour's rest we went to see the famous '**Amber Fort**'. Everyone was amazed by the sheer beauty and grandeur of the fort and the spectacular scenic beauty around it. Again after some sightseeing, umpteen photo sessions and some shopping, we went back to the resort.

After evening tea and pakoras, began the '**Rajasthani folk dance**' which was awesome to say the least. Everyone was dumbfounded when one of the dancers danced on knifes, coal, glasses, etc.

The lively dancers and the ever infectious 'dhol' beat compelled us to join them on the stage.

What came after that was definitely the highlight of our trip- our teachers were a true sport and performed for us on '**kajrare**'. Both of them danced so gracefully and beautifully that all of us became their fans!!

After dinner another exciting adventure activity was awaiting us- '**moon-light trekking**'.

It was an experience in itself- 42 girls with sticks in their hands marched towards the hill to trek with only the moonlight (and the person in charge) to guide them. We had to tread carefully and look out for animals and thorny bushes and trees.

After 5kms of trekking, everyone went back to their rooms exhausted and slept like a log.

The next morning, we went for a '**nature walk**' and saw ruins built centuries ago.

After breakfast, we went for the '**village walk**' around 3 kms away from the resort and everyone bought lovely bangles from there. Since nobody was willing to walk back in the sweltering heat again, we were packed into tractors which was a lot of fun.

After lunch, we packed and boarded the bus to go back to Delhi. Nobody wanted to leave but alas, we had to.

Everyone was exhausted and happily groaning with muscle pain and body ache, but could not stop raving about the action packed, fun-filled trip we had had. It was truly a wonderful experience.
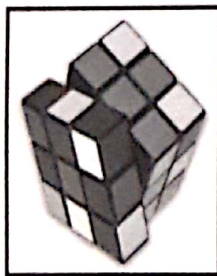
64	63	3	4	5	6	58	57
56	55	11	12	13	14	50	49
17	18	46	45	44	43	23	24
25	26	38	37	36	35	31	32
33	34	30	29	28	27	39	40
41	42	22	21	20	19	47	48
16	15	51	52	53	54	10	9
8	7	59	60	61	62	2	1

## ANUPAMA DUA SCHOLARSHIP FUNCTION   LIPIKA GUPTA

The Anupama Dua Scholarship Function holds a very special place in the annual calendar of the department of Mathematics because this is the day we celebrate the spirit of a very special human being-Anupama Dua.

Anupama was a brilliant student ,a gifted mathematician, and a loyal friend. The function is a tribute to her.. We celebrate her inherent quest for pushing the boundaries of her mathematical knowledge by presenting papers on a vast array of mathematical concepts, which extend beyond the limits of our curriculum..The 15th Annual Anupama Dua function was no exception. The day started on a somber note, with the department observing a minute's silence for the departed soul. The teachers then, shared their memories of Anupama, the student. Thereafter, Mrs. and Mr. Dua gave away the scholarship instituted by them in their daughter's memory. The recipients of this year's scholarship were Dayaneet Shahpuri (3rd year), Ranjavati Banerjee (3rd year), Deepshikha Aggarwal(2nd year), Amala Gupta(2nd year), Rushil Prakash(2nd year) and H.B Sahana (2nd year). The presentations that followed covered topics as varied as the Rubik's Cube and Group Theory, the mathematical shoe, magic squares, Fourier Series, Recession Curves. The emotional climax of the day was however, the nurturing of the tree planted in LSR in memory of Anupama. It was indeed a poignant moment as the bereaved parents watered the, now in bloom, bottle brush tree.

## ORIGAMI   H.B SAHANA

The art of paper folding, or Origami as it is more often known, has been a topic of a considerable amount of mathematical study. It has been used for teaching purposes to help children with learning disorders, to explain concepts involving more than one dimension, in psychology, and as a form of therapy. The basis of all origami folds come from Huzita's seven axioms, which define folds in a plane which when executed, will cause the 2 arbitrary points or lines to come into a specific relation, either by coinciding or falling onto the same line. Axiom 5 and 6 are most important and state *"Given 2 pts p1 and p2 and a line l1, there is a fold that places p1 onto l1 and passes through p2"* and *"Given two points p1 and p2 and two lines l1 and l2, there is a fold that places p1 onto l1 and p2 onto l2"* respectively. The diagrams below depict these.
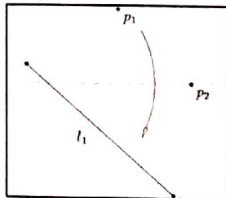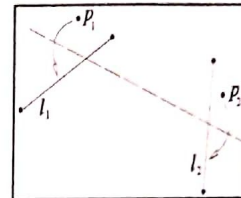

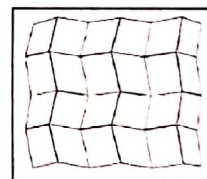Axiom 5   Axiom 6

Axiom 5 may have 1 or 2 possible solutions while Axiom 6 may have up to 3 possible solutions. Thus, the resulting geometries are stronger than the geometries of the compass and straightedge, where the maximum number of solutions an axiom may have is 2. Thus, the compass and straightedge solve second-degree equations while origami geometry (or origametry) can solve third degree equations. Origami has thus also been used to solve some classic geometrical problems like trisecting an arbitrary angle and doubling the volume of a cube, based on the construction of congruent triangles by paper folds and the fact that a square piece of paper can be folded to yield a 3-demensional figure. From the point of view of science, origami is of interest to scientists with respect to a given models flat-fold ability. i.e.: whether a given model can be flattened without damaging it; and with respect to rigid origami. i.e.: whether the model can still be folded if we replace paper with a metal sheet with hinges for folds. The above two concepts were used by Japanese scientists in March, 1995 to pack and deploy a solar power array in a research vessel called Space Flight Unit (SFU). On earth, the solar array was folded into a compact parallelogram, and then in space, it was expanded into a solar sail. This method of folding was based on the Miura map fold of origami.
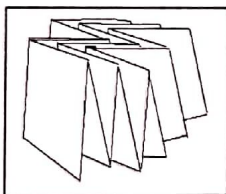
1) The compressed fold as a compact Parallelogram   2) The expanded solar sail

Scientists have also designed a method for folding a space telescope so that it can be packed into a space shuttle and then easily deployed when in space. The foldable telescopic lens is called "Eyeglass". Scientists from the University of Oxford developed an origami stent which can be used to enlarge clogged arteries and veins. The water bomb from origami was used to design the origami stent. A stent is a tube that can be collapsed into a smaller size. Using a balloon catheter, the stent is maneuvered through the patients' veins/arteries to the clot site. When the balloon is inflated, the stent is expanded to a larger diameter, thereby opening the vein/artery for better blood flow. This stent was successful in practice as the fold used ensured that the rough cube being constructed out of a sheet of stainless steel had the largest volume possible, and the lack of sharp cubical edges eliminated the danger of a vein burst. Origami folds have also been employed in constructing crumple zones in the front and rear of cars and trains, which will crumple on impact and absorb maximum shock so that the passengers are safe. It has been used to design collapsible bridges and been applied to the construction of roofs without supporting pillars, like in football stadiums.

THE NEW RUBIK'S CUBE   NATASHA PRAKASH

You might have thought Professor Erno Rubik, the creator of the Rubik's cube, might have rested on his laurels (and the piles of money the puzzle surely earned him), but he hasn't. Erno is hoping that his latest creation, the Rubik's 360 will capture the imagination of the world like his ubiquitous cube did.

The name refers to the fact that the new device is spherical instead of cuboid and consists of a transparent plastic housing and two further internal plastic spheres - both independently suspended on a rotating axis - with six colored balls at its center.

To solve the puzzle each of the colored balls must be steered through holes in the spheres and into their respective colored 'home slot' domes on the outside. This doesn't sound like much of a 'puzzle', more like that of a rattle as Rubik himself admits: "it's a more kinetic challenge, more physical, because gravity is involved! A new brain-teaser to look forward to!

GOLDEN RATIO

LIPIKA GUPTA

In mathematics and the arts, two quantities are in the golden ratio if the ratio between the sum of those quantities and the larger one is the same as the ratio between the larger one and the smaller. The golden ratio is approximately 1.6180339887.

At least since the Renaissance, many artists and architects have proportioned their works to approximate the golden ratio—especially in the form of the golden rectangle, in which the ratio of the longer side to the shorter is the golden ratio—believing this proportion to be aesthetically pleasing. Mathematicians have studied the golden ratio because of its unique and interesting properties. The golden ratio can be expressed as a mathematical constant, usually denoted by the Greek letter φ (phi).

Golden Ratio = 1.6180339887.

The number φ turns up frequently in geometry, particularly in figures with pentagonal symmetry. The length of a regular pentagon's diagonal is φ times its side. The vertices of a regular icosahedron are those of three mutually orthogonal golden rectangles. The golden ratio plays an important role in regular pentagons and pentagrams. Each intersection of edges sections other edges in the golden ratio.

The modern history of the golden ratio starts with Luca Pacioli's *Divina Proportione* (*On the Divine Proportion*) of 1509, which captured the imagination of artists,

Beginning in the Renaissance, a body of literature on the aesthetics of the golden ratio has developed. The first and most influential of these was *De Divina Proportione* by Luca Pacioli, a three-volume work published in 1509. *De Divina Proportione* explored the mathematics of the golden ratio. Some studies of the Acropolis, including the Parthenon, conclude that many of its proportions approximate the golden ratio. The Parthenon's facade as well as elements of its facade and elsewhere can be circumscribed by golden rectangles. A geometrical analysis of the Great Mosque of Kairouan reveals a consistent application of the golden ratio throughout the design, according to Boussora and Mazouz.

The Swiss architect Le Corbusier, famous for his contributions to the modern international style, centered his design philosophy on systems of harmony and proportion. Le Corbusier's faith in the mathematical order of the universe was closely bound to the golden ratio and the Fibonacci series.

Some suggest that the *Mona Lisa*, for example, employs the golden ratio in its geometric equivalents. Salvador Dalí explicitly used the golden ratio in his masterpiece, *The Sacrament of the Last Supper*. The dimensions of the canvas are a golden rectangle. A huge dodecahedron, with edges in golden ratio to one another, is suspended above and behind Jesus and dominates the composition. Mondrian used the golden section extensively in his geometrical paintings.

Adolf Zeising, whose main interests were mathematics and philosophy, found the golden ratio expressed in the arrangement of branches along the stems of plants and of veins in leaves. He extended his research to the skeletons of animals and the branchings of their veins and nerves, to the proportions of chemical compounds and the geometry of crystals, even to the use of proportion in artistic endeavors. In these phenomena he saw the golden ratio operating as a universal law.

The golden ratio, thus, is ample proof of how mathematics is closely related to art, architecture and nature.


$a+b$ is to a as a is to b
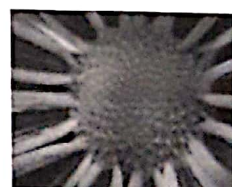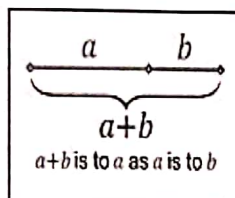
MATHEMATICIAN BY INTUITION

BHAVYA KUMAR

In the early years of the twentieth century India produced a mathematical genius who derived results from complex problems , theorems and propositions more by intuition than actual step by step calculations . He made notable and substantial contributions to various branches of pure mathematics. Srinivas Aiyangar Ramunajan, born on 22nd December 1887 at Erode in Tamil Nadu State of India had no formal training or education in Mathematics but demonstrated a natural ability for the subject from a very early age. By the age of seventeen , he was conducting his own mathematical research on Bernoulli numbers and the Euler-Mascheroni constant . His contributions in the field of Analytical Theory of Numbers , ellpitic functions, continued fractions and infinite series were numerous and laudable. Ramanujan independently compiled nearly 3900 results, mostly identities and equations, during his short lifetime. He stated results that are both original and highly unconventional , such as Ramunajan prime and Ramanujan theta functions . By age eleven he had exhausted knowledge imparted to college students. He had completely mastered S . L. Loney's book on advanced trigonometry by the age of thirteen and had also discovered sophisticated and complicated theorems on his own .

Later Ramunajan ,on the advice of his well-wishers and friends wrote to British mathematician at Cambridge University . He received a very sympathetic and encouraging response from G. H. Hardy and on his advice he proceeded to England in April 1914 . Ramunajan spent nearly five years in Cambridge collaborating with Hardy and Littlewood and published a part of his findings there. Ramunajan was awarded a B.A. degree by research (this degree was later renamed PhD) in March 1916 for his work on highly composite numbers which was published as a paper in the ' Journal of London Mathematical Society'. In December 1917 he was elected to the London Mathematical Society . He was the second Indian to become a Fellow of the Royal Society in 1918 . He was also the first Indian to be elected a fellow of Trinity College , Cambridge. One of the most spectacular results in mathematics is the Hardy-Ramunajan formula derived in 1917 for the number of partitions of an integer .G.H.Hardy went on to claim that his greatest contribution to Mathematics was discovering Ramunajan. Ramunajan was truly an Indian mathematical genius who desevedly won global acclaim.
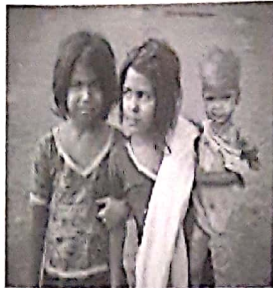
ATLAS SHRUGGED

JAZA BHAVANI

All around me I see the disintegration of morals, the misuse of power, the absence of peace and justice, and a callous disregard for human life and values. This article is not an impassioned debate on women's empowerment, world poverty, global warming or even terrorism. It is about all these and somethings even bigger. It is about the year gone by, its thought provoking events and their bearing on our present, the future and how history will view them. When I tune in to the evening news or read the morning papers, I am disquieted, disappointed and disillusioned with the world I am being forced to grow up in. I find myself fearing the world my children will be forced to grow up in. In the kind of world we live in today, one never knows what will come first—tomorrow or your next life. This is a 'civilized' world but strangely, it fails to fit my description of the word. In our "civilized", twenty first century world, children have to be explained that all airplanes are not meant to crash into towers, all Muslims are not fanatics, all Christians are not supposed to be burnt, all women are not meant to be beaten and raped, and all Jews are not destined for gas chambers. History has less to tell about great rulers and statesmen and more to tell of terrible wars. The American Civil War-when slavery was abolished and gallantry took its last bow. The Second World War-which began with the Polish invasion and ended with the devastation of the atom bomb. The French Revolution-which tells young children how people had their heads severed at the guillotines. History vicariously relates tales of Nazi camp horror-of how a megalomaniac called Hitler exterminated people simply because they were Jews. The Kargil War-when thousands of brave Indians soldiers lost their lives. The Kosovo Crisis-which killed millions and rendered as many homeless. The Vietnam War, the Iraq War, the endless, mindless Israel-Palestine bloodied saga. The 9/11 attack on the World Trade Center, in which 2749 people were killed in the towering infernos, only 20 people were saved. Two of these survivors were put in a medically induced coma for months so that 27 corrective and life saving surgeries could be performed on them. Closer home, the terror attacks on Ahmedabad, New Delhi, Assam and the terrifying ordeal of Mumbai where over 200 people were killed at the iconic Taj and Oberoi hotels. Among the most devastating images of 26/11 is of Moshe, the two year old son of a Rabbi, orphaned and alone, traumatized and bewildered. He could well be one of our kids five to seven years from now. Hundreds of families will never be the same again. So many children will never be comforted by their parents; so many parents will never again hear their children's laughter. Terrorism today is as much a reality of life as water shortage and traffic jams. Yet we wake up the morning after and move on with our lives arriving at no solution to a problem that possibly threatens to destroy the very fabric of our society. What is euphemistically referred to as 'the spirit of urban India' is a weak acceptance of the disruptive elements which endanger the normalcy and peace of our existence. Hundreds of crores were spent on the widely popular IPL cricket matches last year. Frenzied preparations have begun for the 2009 series already. With less than one-tenth of the amount squandered on the IPL, every market, every mall, every office, every public place in the country can be fortified with bomb detectors, bomb diffusion squads, round the clock police patrolling, and all other necessary measures to ensure that every Indian returns home safely. That money, instead of being wasted on cheerleaders and their miniscule dresses, could have gone to provide malnutritioned children of Madhya Pradesh and Orissa, a new and healthy life. The same money could have gone a long way to rehabilitate the victims of the Bihar floods. I'm all for entertainment, but don't we get enough from movies, malls, sports events and vacations? I don't claim to be an economist but it seems to me that the IPL is an unnecessary extravagance in a country that can ill-afford it. Similarly, let's consider the world's ever increasing obsession with the outer space. An obscene amount of money is spent on expeditions to the Moon and Mars and beyond, while millions are dying of starvation and disease in various parts of the world. There may or may not be life on Mars. But there is life on Earth and perhaps it would make more sense to prioritize and ensure their well being first. The world today claims to have broken all previously existing glass ceilings for women. Yet, the globally acclaimed Kiran Bedi, with her astoundingly impressive track record in the police force, is conveniently bypassed and denied the well deserved and well earned post of Commisioner of Police, in what can only be seen as a highly sexist action. The USA, the supposed leader of the progressive, modern world, shuns the idea of a female President or even a female Vice President. The most educated of people still consider a female child to be a burden and in our 'evolved' world, parents need to be constantly reminded via advertisements and legal warnings, that female foeticide is a crime and that the girl child must be provided equal opportunities and love. Yet, on 23 January, a three day old infant girl was found abandoned on the steps of a Delhi temple in the biting cold. Remember 'Chak De, India'? A movie about women's empowerment, hugely popular and widely acclaimed? Don't misunderstand me, I loved the movie and the message behind it. However, other than the actors, the only person to emerge famous was Mir Ranjan Negi, whose life story inspired this lovely movie. As much as I admire this terribly wronged gentleman, I can't help wondering - where are the original Chak De girls who were instrumental in realizing his dream? Where are those women players, the rightful recipients of our admiration and applause? Do we even know their names? I cannot end this article without mentioning the complete disintegration of values in our generation. We are mostly one of two extremes. The first is pushy, competitive and needlessly driven in a race to overcome and surpass everyone, in an effort to become someone they aren't. The second is aimless, swayed by money and power, lacking in any kind of scruples, values and morals. Drugs, drunk driving, hit and run accidents, shootings at parties, teen pregnancies and increased promiscuity, have not occurred overnight, but are certainly more frequent in our generation. Why does today's generation use the phrase 'you only live once' as an excuse to throw life away? Why are women still second class citizens? Why can't adults learn to solve problems with love instead of hate? With tolerance in place of fanaticism? With compassion instead of cruelty? Unfortunately, these questions are all like Ayn Rand's immortal query---Who is John Galt? There doesn't seem to be an answer.

DO TWO WRONGS MAKE A RIGHT?   LAKSHIKA PANT

Over the years, the Indian caste system has refused to get washed away in the river of time. Instead, it still exists, and in a more malicious form than it ever did. During the Vedic ages, when all the Caste Laws are said to have been formulated, a person's caste was decided by the work he did. In other words, it was flexible. But over the years, as our beliefs got all the more inflexible, and the caste system all the more rigid, we have forgotten the true purposes of this system and it has mutated into a social evil, a monster, threatening to destroy the peace and integrity of our nation. Today we are a nation that is struggling to keep up with the pressure of every single community wanting to be classified under a certain "list" of underprivileged or backward classes!!! If it weren't for the graveness of the situation and the impact of such actions on the national sense of well-being, these demands and protests seem hilarious. It is true that over the years, the O.B.C.s and the S.C.S.T.s have been witness to injustice at the hands of a society which heralded the horribly contorted, disfigured and misunderstood "Caste Laws", taking cover under the excuse that they are written in the Vedas. It is equally true that as a result of ages of oppression, certain communities really need to be "rescued" and their standards of living needed to be revived. But is giving them reservation everywhere possible the only option??? I am personally not against the concept of reservation, all I feel is that the criterions which make an individual worthy of reservation need to be revised. What I want to point out here is that is it enough that a person be eligible for reservation just because he belongs to a certain caste? Are there not very poor Brahmins or extremely rich and educated Dalits in our society too? Keeping these facts in mind, I feel that the basis for reservation should not be an individual's caste or religion, but their economic status. Another disturbing policy of the Indian governments, over the years, has been the introduction of these "reservations" and "quotas" not only in elementary and secondary education, but also in institutes of higher education as well as in all public sector firms. Due to this, there is always a fear that the excellence and reputation of such institutes, which are famous for their high standards, is at stake. Most institutions are forced to admit students with really low scores, just because they have to satisfy a certain "quota". Isn't this ultimately undermining the legacy of excellent standards that such institutions uphold? Today, a general category student or a person seeking a job, might be experiencing the same woes that the oppressed classes have been experiencing for years, but this role reversal is only helping to breed further contempt between the two sections into which this process of reservation has divided the society, instead of offering a solution. Instead of eradicating the problem, are we not perpetuating it by making caste a clear criterion for basic things like education and jobs? Are we not breeding further resentment and divisions among our own people? Do two wrongs make a right? As a solution to this dilemma that the society is currently in, I feel that the oppressed and underprivileged in our country need unabated access to a rock solid primary and secondary education system. After which they need to be treated with respect, not with condescension. They have been discriminated against for far too long. Let us not demean, belittle and alienate them further by offering them quotas based on their caste, but consider them as our equals, and enable society to comprehend that the so called "reserved categories" are as capable as any other Indian of proving their mettle in the rigorous and competitive world.

GLOBAL WARMING-A SLOW DEATH   MAITREYI SINHA

'The sky is falling, the sky is falling!' Growing up I heard this phrase in folktales as a "wolf cry"-- a cry that was so ridiculous that nobody would believe it. Now that global warming is an unfortunate reality, the saying doesn't sound so out of place. **What exactly is global warming?** Global warming is an increase in the earth's temperature due to fossil fuels, industrial and agricultural processes caused by human, natural, and other gas emissions. A major causal factor of global warming is The Greenhouse Effect. The Earth is kept warm by its atmosphere, which acts somewhat like a woolly coat. Heat from the sun passes through the atmosphere, warming up the surface of the planet. As the Earth warms up, it emits heat in the form of infra-red radiation. Some of this heat is trapped by the atmosphere, but the rest escapes into space. The problem arises when man-made "greenhouse" gases such as carbon dioxide, nitrogen oxide and chlorofluorocarbons (CFC), along with gases like methane from animal manure, get caught in the atmosphere as well, and result in the overheating of the earth. But what does this mean to you? The effects of global warming will upturn human lifestyles. Agriculture would be thrown into turmoil. Public heath will suffer as warmer temperatures would widen the range of disease carrying rodents and mosquitoes and also cause heat-related deaths. Stronger sunlight and warmer temperatures could cause respiratory illness. Rising seas contaminate water supplies and also endanger small island nations. Arctic shrinkage and glacial retreats have already begun, resulting in species extinction and decreased drinking water. Flooding and droughts, abnormal summers and winters become common phenomena. One way to slow down the escalation of global warming is to reduce the emission of greenhouse gases and/or find ways to balance the gases so that climate change doesn't occur as rapidly. Carbon dioxide pollution and deforestation are major causes of global warming. In light of this impending crisis, the leaders of the world signed The Kyoto Protocol on the 11th of December, 1997 in Kyoto, Japan. The Kyoto Protocol is an agreement made under the United Nations Framework Convention on Climate Change (UNFCCC). Countries that ratify this protocol commit to reducing their emissions of carbon dioxide and five other greenhouse gases. The Kyoto Protocol now covers 181 countries globally but only 60% of countries in terms of global greenhouse gas emissions. The fight against global warming is not only for governments and world leaders, it includes every one of us as well. Start recycling, use public transport, carpools or simply walk! We should also look towards renewable forms of energy such as solar, wind and water, to combat the increasing levels of greenhouse gases and global warming. The Lady Shri Ram College For Women, New Delhi had a "Run for concern of Global Warming", where over five hundred students ran a distance of 3.2 kilometers to help spread awareness about global warming. If everyone in the world is a little more sensitive towards the needs of our planet, then global warming, even if it cannot be stopped, can be reduced drastically.

THE NIGHT I MET EINSTEIN(BY JEROME WEIDMAN)   H.B.SAHANA

When I was a very young man, I was invited to dine at the home of a distinguished New York philanthropist. After dinner, we were to be treated to music, which held no meaning for me. Serious music was to me no more than an arrangement of noise. So I pretended to enjoy the music while submerging myself in completely irrelevant thoughts. I was disturbed by a gentle but surprisingly penetrating voice on my right saying "You are fond of Bach?". I didn't know a thing about Bach, but I did know one of the most famous faces in the world. The renowned shock of untidy white hair, the ever-present pipe between his teeth: I was sitting right next to Albert Einstein! I knew from the extraordinary look in his eye that this was not a man to lie too, however small the lie may be. So I heard myself reply: "I don't know a thing about Bach." The look Einstein gave me was as though I had just said that I had never taken a bath. Then a look of concern replaced his look of complete perplexity, and he said: "Please. Come with me." He took my hand and led me across the crowded room to a study upstairs. Once inside he turned to me with the words: "Is there any music you are fond of? ". I replied that I did listen to a bit of Crosby now and then. Einstein turned to the corner of the room and began playing records on the phonogram in the corner. He started with Crosby, and then went on to McCormack, Caruso and others. Each time he would play the record for a few lines and then ask me to sing them. I did so, and somehow found that I got better at the tune with each try. "You see", he said in a delighted voice," You do have an ear for music!". I mumbled something about it being easy to follow just a few lines at a time and that that did not prove anything. "Nonsense!", said Einstein. "It proves everything! Do you remember your first arithmetic lesson in school? Instead of asking you to work with fractions at the very beginning, I have asked you to begin with simple addition. As is the way with Maths, so is the way with music. Now that you have mastered these few lines, you can master the whole song and then many more, no matter how complicated they are! So now, you are ready for Bach!" We returned to the living room, and I found that listening was after all a very pleasant experience. And all this thanks to the effort made by a stranger, who's eyes seemed to contain extraordinary warmth. At the end of the concert, our hostess turned to Einstein and giving me an icy stare said, "I'm so sorry that you missed much of the performance." Einstein simply looked at her and said, "I am sorry too. But my friend and I were engaged in the greatest activity a man is capable of- Opening up yet another fragment on the frontier of beauty."

LILACS BLOOM EVERY SPRING   JAZA BHAVANI

Sometimes all you want from life is another chance. It's when you realize that you gave something your heart and soul and still failed. It's when you find all the achievements and qualities you had felt had made you who you are shockingly imperiled. It's when you ask yourself---if what I am is what I had achieved, and if all I have achieved is lost, then who am I?

But this is also when you realize that setbacks and tragedies can serve as a springboard for change. When you lose everything --- everything you valued---you become strangely confident. All the insecurities and anxieties vanish. You realize the power and strength within you and feel liberated.

'Freedom's just another word for nothing left to lose...' How true. None of this means that you accept the situation, that you accept defeat. Because you have a spirit and the spirit is always indomitable. You start afresh with renewed zeal and fervor and you rise once again, like a Phoenix. Because defeat is something you don't accept, impossible is a word you haven't heard, and challenge is something you don't shirk. Only this time you are experienced enough not to expect anything in return. Expectations bring pain. You start with hope. You learn from the lilacs that bloom every spring. You learn the most important lesson of life---Tomorrow is another day. And sometimes when everything looks dismal, your soul gives you another chance---the only thing life cannot take away.

PRIZES FOR MATHEMATICAL EXCELLENCE

The Fields Medal is a prize awarded to mathematicians not over 40 years of age at each International Congress of the International Mathematical Union, a meeting that takes place every four years. The Fields Medal is widely viewed as the top honor a mathematician can receive. It comes with a monetary award, which in 2006 was C\$15,000 (US\$15,000 or €10,000). Founded at the behest of Canadian mathematician John Charles Fields, the medal was first awarded in 1936, to Finnish mathematician Lars Ahlfors and American mathematician Jesse Douglas and has been regularly awarded since 1950. Its purpose is to give recognition and support to younger mathematical researchers who have made major contributions.
The Fields Medal is often described as the "Nobel Prize of Mathematics" for the prestige it carries, though in most other ways the relatively new Abel Prize is a more direct analogue. Fields Medals have generally been awarded for a body of work, rather than for a particular result; and instead of a direct citation there is a speech of congratulation. Other major awards in mathematics, such as the Wolf Prize in Mathematics and the Abel Prize, recognize lifetime achievement, again making them different in kind from the Nobels, although the Abel has a large monetary prize like a Nobel. The Fields Medal has the prestige of the selection by the IMU, which represents the world mathematical community.The Fields Medals are commonly regarded as mathematics' closest analog to the Nobel Prize (which does not exist in mathematics), and are awarded every four years by the International Mathematical Union to one or more outstanding researchers. "Fields Medals" are more properly known by their official name, "International medals for outstanding discoveries in mathematics." The Fields Medal is made of gold, and shows the head of Archimedes (287-212 BC) together with a quotation attributed to him: "Transire suum pectus mundoque potiri" ("Rise above oneself and grasp the world"). The reverse side bears the inscription: "Congregati ex toto orbe mathematici ob scripta insignia tribuere" ("the mathematicians assembled here from all over the world pay tribute for outstanding work").

The Norwegian Academy of Science and Letters awarded the **Abel Prize for 2008** to **John Griggs Thompson**, University of Florida and **Jacques Tits**, Collège de France. This was announced by the Academy's President, Ole Didrik Lærum, at a press conference in Oslo. Thompson and Tits received the Abel Prize "for their profound achievements in algebra and in particular for shaping modern group theory".

Jorge Lauret (38) of the Universidad Nacional de Córdoba in Argentina is the winner of the **2007 Srinivasa Ramanujan Prize**. The Prize carries a \$10,000 cash award donated by the Niels Henrik Abel Memorial Fund. Jorge Lauret received the prize at an award ceremony 3 December 2007 at the International Centre for Theoretical Physics in Trieste, Italy.

HUMOUR IN MATHS

Q: How many times can you subtract 7 from 83, and what is left afterwards?
A: I can subtract it as many times as I want, and it leaves 76 every time.

Q: How many mathematicians does it take to screw in a light bulb?
A: None. A mathematician can't screw in a light bulb, but he can easily prove the work can be done.

Q: What's a polar bear?
A: A rectangular bear after a coordinate transform.

Q: What is the difference between a Ph.D. in mathematics and a large pizza?
A: A large pizza can feed a family of four...

*A mathematician, a physicist, and an engineer are on a battlefield. A mathematician will be able to calculate where the shell will land. A physicist will be able to explain how the shell gets there. An engineer will stand there and try to catch it.

*If it squirms, its biology; If it stinks, its chemistry; If it doesn't work, its physics; and if you can't understand it, its mathematics.

*A tragedy of mathematics is a beautiful conjecture ruined by an ugly fact.

*An engineer, a physicist and a mathematician are staying in a hotel.
The engineer wakes up and smells smoke. He goes out into the hallway and sees a fire, so he fills a trash can from his room with water and douses the fire. He goes back to bed.
Later, the physicist wakes up and smells smoke. He opens his door and sees a fire in the hallway. He walks down the hall to a fire hose and after calculating the flame velocity, distance, water pressure, trajectory, etc. extinguishes the fire with the minimum amount of water and energy needed.
Later, the mathematician wakes up and smells smoke. He goes to the hall, sees the fire and then the fire hose. He thinks for a moment and then exclaims, "Ah, a solution exists!" and then goes back to bed.

*God is real, unless proclaimed integer.

*Philosophy is a game with objectives and no rules.
Mathematics is a game with rules and no objectives.

*A mathematician is asked to design a table. He first designs a table with no legs. Then he designs a table with infinitely many legs. He spends the rest of his life generalizing the results for the table with N legs (where N is not necessarily a natural number).

*New York (CNN). At John F. Kennedy International Airport today, a high school mathematics teacher was arrested trying to board a flight while in possession of a compass, a protractor and a graphical calculator. According to law enforcement officials, he is believed to have ties to the Al-Gebra network. He will be charged with carrying weapons of math instruction. It was later discovered that he taught the students to solve their problem with the help of radicals!

*A math professor is one who talks in someone else's sleep.

How the different zodiac signs in a classroom approach a math problem

ARIES: Done!!!! Could have given me a challenge you know........
TAURUS: Give me a snack, I can't think when I'm hungry.......
GEMINI: This method was fine but let's try a faster one..........
CANCER: I think I've done it right but let me ask Mama.....
LEO: Man, this was too easy and look how fast I solved it...I rule all...
VIRGO: My answer is right but I'm still not satisfied with the concept.....
LIBRA: Jeez, there are four methods I have in mind but I haven't decided which one. Of course, the first one is short but the second one is what the teacher suggested, I've personally understood the third one, the fourth one is the one everyone told me to avoid..............so it's the fourth one I guess.....
SCORPIO: I already did this question at home and let me tell you everyone else has got it wrong......
SAGITARIOUS: Wow, now that's a thinker......Can I copy yours and figure it out later?
CAPRICORN: They don't say anything. They figure out the question, write it down step by step and wait for the next one.
AQUARIOUS: Let's figure it out mentally.......Wait! .....Is it raining?
PISCES: Does anyone have a pen? I've just figured out yesterday's question!!!!

JAZA BHAVANI

THE OPPORTUNITIES AFTER MATHS HONOURS ARE ENDLESS. JUST A FEW OF THE TREMENDOUS NUMBER OF CAREER OPTIONS ARE EXPLAINED BELOW.
WE CAN BECOME ....

ACCOUNTANTS : Accountants are involved in the design and implementation of accounting systems. They prepare and analyze financial reports for businesses, governments and other organizations and ensure that they conform to generally accepted accounting principles. Business people use the accounting data to communicate about a firm's activities and to plan for the future. The three main fields in which accountants are employed are: public accounting , private accounting and government accounting.

ACTUARIES: Actuaries are business professionals concerned with the design of insurance, pension and similar financial programs. Their main objective is to ensure that these programs are financially sound. Through the application of probability, statistics, risk theory and principles of finance, actuaries are able to calculate future risks associated with insurance, annuity and pension programs. Most actuaries work for life, health and property/casualty insurance companies. In these companies, actuaries are involved in almost every aspect of the business and their judgement is relied on heavily to ensure financial security.

BANKING,CREDIT,INVESTMENT MANAGERS: Banking, credit and investment managers are employed by financial institutions such as banks, trust companies, consumer loan companies, mutual fund investment firms, mortgage investment companies and credit unions. Credit managers are also employed in credit departments of insurance companies, utility companies, department stores and other industrial and commercial organizations.

SYSTEM ANALYSTS: System analysts work closely with information users such as managers, accountants etc., analyzing the informational needs within the organization. Many alternatives for solving the problem in question are defined by the systems analyst and their costs and benefits are assessed. The information users and the systems analyst will then determine which alternative gives the best return for their time and money invested.
Once the best alternative is selected, a detailed design of the project is done. The systems analyst prepares specifications to either design a program or to modify the existing program and works closely with the programming staff until this is implemented. Mathematical model building, cost accounting, sampling etc. are used in designing the system

MARKETING RESEARCH SPECIALISTS: In marketing, there are a number of areas such as sales and sales management, research, international marketing, industrial marketing and retailing & merchandising.
Market research specialists have expertise in areas such as statistics, mathematical modeling and research design. Their responsibilities include overseeing research activities, working closely with managers who are handling the implementation of research activity and discussing the statistical methodology used and the analysis of the findings.

RESEARCH AND TEACHING : This is the golden age (as far as job opportunities are concerned) for Masters and Ph.D. degree holders in Mathematics. For those inclined towards a research career, many positions are available in research institutions and universities. For those who wish to pursue a teaching career, well-paying teaching positions are available in plenty in private engineering colleges. And for those who are willing to apply mathematics to practical problems, there has been a dramatic change in the job scene over the past few years in India. Many financial services companies, research labs of multinational companies and others are aggressively recruiting Indian mathematicians. The salaries offered are better than those offered to IT graduates. Students trained in pure mathematics are also actively recruited by these industries since almost all branches of mathematics are useful to them.

COMPUTER SCIENCE: Computer science is the study of the theoretical foundations of information and computation and their implementation and application in computer systems. Mathematicians, with their training in logical and precise thinking, are highly prized in this field.

OPERATIONS RESEACH: Operations research is an interdisciplinary branch of mathematics which uses mathematical methods to arrive at optimal decisions to problems in maximizing or minimizing things like costs or profits. The eventual intention behind using Operations Research is to elicit a best possible solution to a problem mathematically, which improves or optimizes the performance of the system. The group INFORMS is the world's largest society devoted to operations research/management science.

BIOMATHEMATICS: Mathematical biology or biomathematics is an interdisciplinary field of study. It models natural and biological processes using mathematical techniques and tools. Results have been applied to areas such as cellular neurobiology, epidemic modeling, and population genetics.

CRYPTOGRAPHY: Cryptography is the practice and study of hiding information. Cryptography is considered to be a branch of both mathematics and computer science. Not just for spies anymore, cryptography applications include the security of ATM cards and computer passwords.
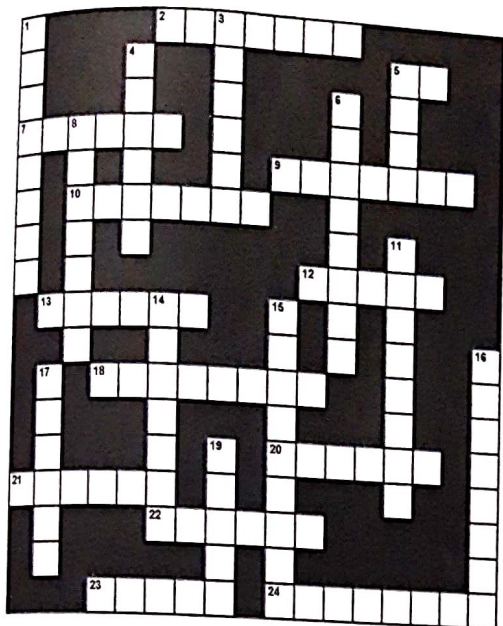
Across

2. The result in multiplication (7)
5. Approximately equal to 3.1415 (2)
7. Number added to another in addition (6)
9. The bottom number in division (7)
10. A positive or negative whole number (7)
12. A sign used in subtraction (5)
13. Amount of space taken up by a 3D object (6)
18. 1/2 or 3/4, for example (8)
20. This shape has all points the same distance from its center (6)
21. The 3 or the 2 in 3 X 2 = 6 (6)
22. Is identical in value (6)
23. Figure formed by two lines extending from the same point (5)
24. Take away (8)

Down

1. This shape comes in scalene, equilateral, or 15-Down varieties (8)
3. Angle greater than 90 degrees and less than 180 degrees is this (6)
4. Longer dimension of a rectangle (6)
5. ____ sign, +, is used in addition (4)
6. Sharing a pie between friends requires this kind of operation (8)
8. No Clue
11. To determine the product (8)
14. A gram, a foot or 87 degrees (7)
15. A three-sided figure having two equal sides (9)
16. The answer in a division problem (8)
17. A quadrilateral with four sides equal (6)
19. An angle measuring less than 90 degrees (5)

GUESS THE MATHEMATICIANS

I He pioneered the study of analysis, both real and complex, and the theory of permutation groups. He also researched in convergence and divergence of infinite series, differential equations, determinants, probability and mathematical physics.

II He discovered the X and Y axis. He wrote the book 'SEEKING THE TRUTH IN MATHEMATICS'.

SUGESSTED READING

*ATLAS SHRUGGED *BY AYN RAND*

*THE ZOYA FACTOR *BY ANUJA CHAUHAN*

*THE SECOND SEX *BY SIMONE DE BEAUVOIR*

*THE THREE MISTAKES OF MY LIFE *BY CHETAN BHAGAT*

*"I DARE!" KIRAN BEDI-A BIOGRAPHY

*THE STORY OF MY LIFE *BY HELEN KELLER*

*THE COLOUR PURPLE *BY ALICE WALKER*

*GIRL ALONE *BY RUPA GULAB*

*THE AUDACITY OF HOPE *BY BARACK OBAMA*

WOMEN IN MATHEMATICS

Irene Maria Quintanilha Coelho Da Fonseca was born in Portugal and after studying mathematics in Lisbon, she transferred to the USA. She earned her Ph d at the university of Menosota in 1985.
Her recent work has been focused on the search for effective or relaxed energies, and on the study of existence, regularity, oscillatory and hysteretic behavior of solutions of (non convex) variational problems associated with material instabilities, phase transitions, plasticity, nucleation and growth of phases, fracture and defects in solids.

SCIENCE JOURNAL ERNIE, WE NEED A HEADLINE THAT WILL INTEREST THE GENERAL PUBLIC IN OUR ARTICLE ON SUPERNOVAS.

"BIG STARS INVOLVED IN NASTY BREAKUPS"!

EDITOR

E-mail ThavesOne@aol.com   3-2
©2009 Thaves / Dist. by NEA, Inc. THAVES

DUDENEY'S CRYPTARITHM

```
  S E N D
+ M O R E
-----------
M O N E Y
```

Each letter represents a different digit from 0-9. Any duplicate letters share the same value (ie, all M's will have the same digit assigned to it). There is only one possible solution.

THE MISSING DOLLAR

Three people are eating at a restaurant. The waiter gives them the bill, which totals to $30. The three people decide to share the expense equally ($10 each), rather than figure out how much each really owes. The waiter gives the bill and the $30 to the manager, who sees that they have been overcharged. The real amount should be $25. He gives the waiter five $1 bills to return to the customers, with the restaurant's apologies. But, the waiter is a dishonest man. He puts $2 in his pocket, and returns $3 to the customers. Now, each of the three customers has paid $9, for a total of $27. Add the $2 that the waiter has stolen, and you get $29. But, the original bill was $30. What happened to the missing dollar?

EIGHT LOAVES OF BREAD

Here is a famous problem. Three travelers are sitting around a fire, and are about to eat a meal. One of them has five small loaves of bread, the second has three small loaves of bread. The third has no food, but has eight coins. He offers to pay for some bread. They agree to share the eight loaves equally among the three travelers, and the third traveler will pay eight coins for his share of the eight loaves. All loaves were the same size. The second traveler (who had three loaves) suggests that he be paid three coins, and that the first traveler be paid five coins. The first traveler says that he should get more than five coins. Is he right? How should the money be divided up?

LEWIS CARROLL'S ALGORITHM

(for finding the day of the week for any given date)

[This is from Martin Gardner's **The Universe in a Handkerchief: Lewis Carroll's mathematical recreations, games, puzzles, and word plays** (Science Library QA95 .G3325 1996)]

Take the given date in 4 portions, viz. the number of centuries, the number of years over, the month, the day of the month.

Compute the following 4 items, adding each, when found, to the total of the previous items. When an item or total exceeds 7, divide by 7, and keep the remainder only.

The Century-item For Old Style (which ended September 2, 1752) subtract from 18. For New Style (which began September 14) divide by 4, take overplus from 3, multiply remainder by 2.

The Year-item Add together the number of dozens, the overplus, and the number of 4s in the overplus.

The Month-item If it begins or ends with a vowel, subtract the number, denoting its place in the year, from 10. This, plus its number of days, gives the item for the following month. The item for January is "0"; for February or March, "3"; for December, "12".

The Day-item The total, thus reached, must be corrected, by deducting "1" (first adding 7, if the total be "0"), if the date be January or February in a leap year: remembering that every year, divisible by 4, is a Leap Year, excepting only the century-years, in New Style, when the number of centuries is *not* so divisible (e.g. 1800).

The final result gives the day of the week, "0" meaning Sunday, "1" Monday, and so on.

(CONTRIBUTED BY LIPIKA GUPTA)

WORD SEARCH

ADD
ALGEBRA
APPLIED
CALCULUS
DECIMAL
DIGIT
DIVIDE
EQUAL
EQUATION
ERROR
EVEN
FRACTION
GEOMETRY
INTEGER

LESS
LOGARITHM
LOGIC
MEDIAN
MODE
MORE
MULTIPLY
ODD
OPERAND
PARAMETER
PI
PROBABILITY
PROBLEM
PRODUCT

RANGE
RATIO
REMAINDER
RESULT
ROOT
ROUND
SLOPE
STATISTICS
SUBTRACT
SUM
THEOREM
TOTAL
TRIGONOMETRY
VECTOR

SUDOKU

4				1	5			
	5		8		6			
	2		3					
	8							3
9	1						6	7
2						4		
		8		1				
	7		9		3			
		7	6					4

OVERALL DESIGN & OUTLAY	: JAZA BHAVANI & LIPIKA GUPTA
EDITOR	: JAZA BHAVANI
PRODUCTION	: JAZA BHAVANI