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Time 2000 Shines Again

By Ilysse Baum



TIME 2000 prides itself on the high quality of the professors who teach within the program. This is evidenced by the most recent honors received by Mathematics Education Professor Dr. Frances Curcio and Mathematics Professor Dr. Alan Sultan.

One of only two candidates in the nation, our very own Dr. Curcio was a nominee for the prestigious position of President of the National Council of Teachers of Mathematics (NCTM). Dr. Curcio has been an invaluable member of the mathematics education community for over thirty years, and her extensive pedagogical experience ranges from working with pre-kindergarten students all the way to us “older kids” at the college level.

Dr. Curcio’s philosophy is that the “essential ingredient for students’ achievement begins with each one of us [the mathematics teachers].”

Whether behind the digital camera at every TIME 2000 event, or in front of our Mathematics Education classrooms, Dr. Curcio is truly an inspiration and an exemplary mathematics educator. I am so proud to join everyone in the TIME 2000 community in congratulating Dr. Curcio on this monumental achievement!

Our beloved Mathematics professor, Dr. Alan Sultan, was also recently honored. At the fall faculty assembly on October 20, 2004, he was recognized as an outstanding teacher, as he was the recipient of the esteemed Queens College President’s Award for Excellence in Teaching.



Nominated by both his students and his colleagues, and selected by a presidential committee, Dr. Sultan joins two other TIME 2000 professors who have received this prestigious award: Professor Alice Artzt, Director of the TIME 2000 Program, and Mathematics Professor Martin Braun. The entire TIME 2000 family extends its warmest congratulations to Dr. Sultan!

* For more information about NCTM, please visit the NCTM website at <http://www.nctm.org>.

Visit TIME 2000 on the web:
www.qc.edu/time2000

Experiences In Tutoring

By Mamadou Diallo

When I first started tutoring, the only positive aspect I associated with it was money. Over time, as my tutoring experience grew, that impression faded away as I began to understand that besides money, there are numerous other significant benefits associated with tutoring. Tutoring gives me *a sense of pride and accomplishment for having helped someone else*. I get a lot of internal satisfaction when I see that my student is enthusiastic about being able to perform a task as a result of my help. Last year, I was tutoring a high school senior in preparation for the Mathematics Regents Examination. As a result of his poor performance in math, his parents decided to hire a tutor to help him (that’s where I fit in!). I would go twice a week to his house, help him with his homework and clarify any mathematical concepts that he wasn’t able to understand in class. As we moved along that path, his grades started to get better and better and when he finally took the Regents exam, he passed it with a grade of B. I was proud of myself after that experience; I was proud of the fact that I was able to be of help and make a difference in his life.

As prospective math teachers, tutoring lays the basic foundation for our future teaching careers. It helps *increase mastery of academic skills*. I think that tutoring is a process of conveying something that you already know and understand to someone else who is less experienced. Therefore, whenever one tutors, he is in fact revisiting, practicing and rehearsing some already known form of knowledge. I personally enjoy tutoring the most for this reason. There were mathematics subjects that I studied in high school, that I didn’t really master fully. So, whenever I have to tutor in one of these areas, I do some preliminary review sessions on my own by rereading my high school books and notes to try and develop other levels of understanding. Before every tutoring session, I give myself the time to review whatever it is that I will be teaching the student. By doing so, I get to develop and conceptualize a fuller understanding of the topic at hand.

Another thing that I find fascinating about tutoring is that *it gives tutors a greater sense of dedication to their own instruction* so that they can effectively convey it to the student. As a future mathematics teacher, I do everything possible to understand, interpret and categorize any

mathematical concepts that I am learning now because I know that one day I will be in a position to teach it to other people. Four years ago, before I started tutoring, it really did not matter to me if I didn’t understand something in mathematics; I just took it for granted that it was a very difficult subject to understand and that would explain my failure of comprehension. However, after I started tutoring and decided that I would be a mathematics teacher, I knew that I must try and understand what I previously thought was difficult. No matter how hard it is, my only option is to do everything possible to gain insight in a way that can allow me to explain it to those in need of help.

My advice to anyone who aspires to be a mathematics teacher is to be intensely involved in the tutoring process. Not only does it allow you to benefit from all the facts discussed above, but it also equips you with the background that you need when you become a mathematics teacher.

**If you have any questions about tutoring, or are interested in tutoring students in NYC or Long Island, please contact MT4, the tutoring club, located in the Student Union, Room LL6. Visit us on the web at www.mt4.org.*

Internship Experiences

By Shari Eng & Nadia Jackson

Although long gone, it is never too late to reflect back on the experiences that characterized the summer of 2004. This past summer, we were accepted into an internship program with the New York City Parks Department that required a mathematics background. TIME 2000 graduate and current internship coordinator, Tara Wachter, arranged this experience for us.

Every day, we were expected to report to the park’s central office, *The Arsenal*, and then travel to the various parks throughout the five boroughs. We had to collect a set number of surveys from visitors from each park, according to age group. In order to manage our data efficiently, we entered the information in Microsoft Access. After we were asked to analyze the data we received, the park’s supervisors, Dan and Sherry, said we could choose our own topic to analyze. We thought about it and decided to analyze the age groups of the pedestrians and the reasons why they came to the park. We hypothesized that young teens would come to the park to play basketball and do outdoor activities while elderly park goers would come to relax and enjoy the sun. With the statistics background we



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according to age group. In order to manage our data efficiently, we entered the information in Microsoft Access. After we were asked to analyze the data we received, the park’s supervisors, Dan and Sherry, said we could choose our own topic to analyze. We thought about it and decided to analyze the age groups of the pedestrians and the reasons why they came to the park. We hypothesized that young teens would come to the park to play basketball and do outdoor activities while elderly park goers would come to relax and enjoy the sun. With the statistics background we

received from our TIME 2000 classes, we proved that our initial theory was correct. Park goes from ages 10-20 years mainly came to the park for outdoor activities and to use the park's equipment and park goes over age 40 came to relax and spend time with their children (or grandchildren). It was quite interesting to see that our assumptions were correct!

I [Shari] believe that the internship was a great opportunity to learn new things about the parks (other than merely using the swings and the basketball court), to meet new people, and to use our background of statistics to analyze the collected data. I [Nadia] think that the surveying experiences we were engaged in will definitely prove useful when teaching my future secondary school students.

**If you are interested in information about an internship for Summer '05, email Tara at mathinterns@aol.com.*

History of Math

Srinivasa Ramanujan (1887-1920)

By Sahil Kapoor

On Thursday, December 22, 1887, Srinivasa and Kamalammal were blessed with a child prodigy: arguably India's greatest mathematician of all time. However, soon to be India's greatest mathematician did not appear to be one of the brightest children on the banks of Cauvery River in south India. Robert Kanigel, author of *"The Man Who Knew Infinity"*, described Ramanujan as "stubborn and eccentric". He frequently had odd demands of his parents. On one occasion he wanted all the brass utensils in the house so he could try to line them up. When his father intervened, he threw a tantrum and rolled himself in the mud. He didn't speak much until the age of three which further increased doubts of his intelligence. It wasn't until he was five that his intellect began to be evident. He learned a few consonants and vowels of the Tamil alphabet. His teachers soon realized that Ramanujan was an unusual child. He was fond of asking questions like, "who was the first man in the world?" and "how far is it between the clouds?"



Within years, his academic career began to take off and he entered The Town High School in 1898 and began studying mathematics independently. He came across a book by G. S. Carr titled *Synopsis of Elementary Results in Pure Mathematics*. This was probably the first advanced text that caught his eye; he was so impressed with this book that he decided to pursue his own mathematical research.

Ramanujan read about how to solve cubic equations and went on to discover his own way to solve the quartic equations. He also attempted to solve the quintic equations, but of course failed because roots of a quintic equation (polynomial of degree five) cannot be extracted by usual algebraic manipulations. He also studied infinite series in great detail (that's probably why he is known as "the man who knew infinity"). In finding the summation of many complicated infinite series, he took many intuitive leaps that baffled his contemporaries.

This great intuitive mind would have never been discovered if it hadn't been for Britain's big league mathematician, G.H Hardy. Ramanujan sent his work to many of England's mathematicians, but none of them were ready to take a chance on an unknown so-called "genius kid" from a third world country. However, when Hardy saw Ramanujan's work, he was so impressed by it that within months he arranged for Ramanujan to visit London and further his mathematics studies at Cambridge University; this was the break which Ramanujan was looking for.

Ramanujan packed his notebooks, where he recorded his results, and headed to Cambridge to meet Hardy. As luck would have it, the two hit it off. Hardy later recalled one of his conversations with Ramanujan. Once when Ramanujan was sick, Hardy went to visit him and arrived in a taxi numbered 1729. He remarked, "that number is rather boring," and Ramanujan immediately responded, "no it's not; it's the smallest integer that can be expressed as a sum of cubes two different ways."

$$1729 = 10^3 + 9^3$$

$$1729 = 12^3 + 1^3$$

Every time I think of this story, hair on my head rises with confusion, incomprehension, and admiration. While this may seem difficult for most people, it was quite simple for Ramanujan.

One of Ramanujan's interesting results is:

$$\frac{\sqrt{8}}{9801} * \sum_{n=0}^{\infty} \frac{4n!}{n!^4} * \frac{1103+26390n}{396^{4n}} = \frac{1}{\pi}$$

It was unfortunate that due to an illness he died at the young age of 33. Ramanujan left many unpublished notebooks that contain thousands of theorems, which are still being studied by mathematicians today.

Fun Corner
 A bowl contains 100 pieces of colored candy: 28 green, 20 red, 12 yellow, 10 blue, 20 brown and 10 orange. If you are blindfolded as you pick and eat candy from this bowl, how many pieces must you eat in order to guarantee that you have eaten at least 15 of the same color?
 * If you would like the answer, please email us at IrrationalWriters@yahoo.com

T-3: Where are they now?

By Ilysse Baum

One of the highlights of being in the TIME 2000 program is the friendships that are formed during our college years. Several TIME 2000 students who graduated last semester have been fortunate to extend their friendships into the workplace, by starting their first year of teaching in the same schools!

TIME-3 graduates Tova Babakhanov and Sabaa Zickria are currently teaching at the Queens High School for Teaching and Liberal Arts, while Valbona Baci and Pelly Papoutsis are new additions to William Cullen Bryant High School's Mathematics Department. Wen Yu (Sara) Liu, who is currently teaching with classmate Maryann Sadera at Oceanside Middle School, caught up with us recently and shared some of her experiences as a first year mathematics teacher.



This past summer, Sara could not imagine how she would teach the same thing to five seventh grade classes day in

and day out without becoming bored. A few weeks into the semester, a similar sentiment was echoed by one of her students, who asked, "Ms. Liu, don't you get bored teaching the same thing every single day?" When she thought about it, Sara concluded that although she is "presenting the same thing [material]" to all of her five classes, she is not actually *doing* the "same thing." Each of her students behaves differently, which has different effects in the classroom, and she stated that it is "very intriguing" to witness how this influences each lesson

The two most important aspects to being a successful mathematics teacher, according to Sara, are "showing the students that [she] cares, and being prepared for each day's lesson." Her colleagues also contribute to the positive attitude emergent in Sara's classroom, as they have been extremely supportive of and welcoming to Sara and the other first year teachers.

Although she knows she will always be a member of the TIME 2000 family, Sara concedes that it is not "the same," since she has graduated. Sara misses the program greatly, and when asked to sum up her sentiments about TIME, she said, "TIME 2000 is the best program, as it helps all of us grow as teachers and as friends. It is a great feeling when you are surrounded by people who share the same interests in life, and are willing to see to it that we all become the best teachers and people that we possibly can."

Good luck to all the TIME 2000 graduates!