Who is James Tanton?

James Tanton, a visiting scholar of the Mathematical Association of America (MAA), will deliver the keynote address at the annual TIME 2000 event, Celebrating Mathematics Teaching, at Queens College on November 22, 2013. Dr. Tanton’s goal is to connect the creative mathematics practiced and explored by mathematicians to the mathematics learned by students. His credentials in the fields of mathematics and education are numerous, including B.S. degrees in Mathematics and Mathematical Physics from the University of Adelaide (Australia) and an M.A. and Ph. D. in Mathematics from Princeton University (USA). As a result of his academic achievements and teaching excellence, Dr. Tanton received several awards including the MathMovesU Math Hero Award and the Princeton University Engineering Council Teaching Award.

Dr. Tanton became a mathematician because he always loved “pondering about mathematics” as well as sharing his mathematical thoughts with others. He became a mathematics teacher because he consulted with mathematics teachers and wanted to learn about the demands and life of a high school teacher. According to Dr. Tanton’s essay, What Made Me a Mathematician (and Why I Approach Mathematics the Way I do), his love for mathematics started with pondering about the ceiling tiles in his childhood bedroom in an old Victorian house. The tile design formed a 5x5 grid of squares. He would lay in bed and ask himself, “How many rectangles can I form? How many squares can I form?”. He created his own set of puzzles and games with this 5x5 grid. He had an “enlightening moment” when he could not solve a puzzle he created. As a child, he liked to play with shapes, patterns and structures. However, he did not connect this with the mathematics of computational skills and rote learning taught in schools. It was not until years later that he realized that what he loved to do was indeed considered mathematics. His goal now is to bring “play and wonder” to the classroom.

As a teacher, Dr. Tanton’s greatest wish is to instill confidence in students - confidence to “flail,” - try something and then try something else; confidence to do something, be wrong and keep going. For example, when first presenting quadratic equations to students, he cares much more about “students’ epiphanies, trying stuff and problem solving” than the solutions or a memorized formula. Dr. Tanton ultimately desires to make the learning and teaching of mathematics more enjoyable. He stresses the importance of giving students interesting problems and encouraging them to use “common sense and wit” to find ways to solve the problems. Due to today’s focus on testing, this is a great challenge. According to Tanton, “intellectual play” is the key for future mathematics teachers to share their love for mathematics with their students. “Be full of play and wonder,” he advises. “Be playful with words and terms and always ask questions. Questions and critical thinking allow us to see the true beauty of mathematics. And, mathematics problem-solving leads to life problem-solving!”

James Tanton frequently updates his Web site with useful resources for teachers and students. He posts essays and short videos, and lists books that he has written, such as Math Activities for Students and Clubs (MAA, 2001), The Encyclopedia of Mathematics (Facts on File, 2005), and Mathematics Galore! (MAA, 2012). These resources reveal ways to clarify mathematical concepts found in the standard curriculum and provide teachers with classroom applications. Visit jamesanton.com to view valuable resources and great mathematical videos that will inspire your own sense of “play and wonder.”

If you are interested in writing for this newsletter, contact

Timothy: timho2012@gmail.com
Crystal: crystalpurpura@gmail.com

By: Crystal Purpura (T-15)
Every day, I ran home from elementary school with my cool Sketchers that lit up when my feet touched the ground. As soon as I entered my house, I would rip my bright pink backpack off my shoulders, sit on my living room floor and turn on the TV. You’re probably thinking I could only be this excited to watch Power-Rangers or Arthur, but you aren’t close! The show that made me forget about my hunger and my piles and piles of homework, as a third grader, was Cyberchase! Ever since I was a little girl, Cyberchase was my absolute favorite show. At the time, I couldn’t explain why it was so amusing to me, but as I grew older I began to realize why I loved Cyberchase so much.

Cyberchase is a show on PBS about a group of three kids and a bird who use mathematics to solve problems in their everyday lives. They use proportions, fractions, multiplication, addition, and other mathematical concepts to fight against their arch enemy, The Hacker, to save the day! I didn’t know it at the time but the reason why I was such an avid fan of the show was because it made math so much fun!

As I grew up, I was always one of those kids who wanted to be a part of everything, who wanted to go above and beyond and experience as many things as possible. In high school I was a member of at least ten clubs, from Future Business Leaders of America (FBLA), to Invisible Children, which was an organization that raised money for child soldiers in Africa. I wanted to explore my options because I had no idea what I wanted to be.

One day during senior year, I sat down and really thought about what I loved most. I narrowed it down to two things: helping people and mathematics. I wasn’t quite sure what I wanted to do in life, I just knew I wanted to help people and somehow incorporate math into it. The same week that all this was going through my mind, an act of fate occurred. I was sitting in my calculus class waiting anxiously to get started, when my teacher told us she had an announcement. She told us that there was going to be a conference the following week for people who were interested in becoming secondary education math teachers. She passed around a sheet for anyone who was interested in going and I was too ignorant to realize that this is what I wanted to do, so I didn’t sign up to attend the conference. My teacher saw the doubt on my face and signed me up anyway and to this day I am so thankful to her!

November 18, 2011, was the day that my life changed forever. By attending the TIME 2000 conference, I knew that is where I belonged and teaching math is what I wanted to do. Words cannot describe how happy and thankful I am to be a part of TIME 2000. It is because of this program that I was able to meet such extraordinary people who I can call my family, a family that shares the same goals. Being someone who loves to experience new things, I wanted to have a summer internship. As a member of TIME 2000, this became a real possibility. No matter how hard and far you look, you won’t find a better support system than the one in Hortense Powdemark Hall, room 002. When I told Mrs. Weinman I wanted to have an internship she was supportive and directed me to a TIME 2000 graduate, Tara Wachter (T-1). Tara constantly looked for internships for me and was a big help. She emailed me as soon as she heard about a Cyberchase internship and asked me to apply. I was so excited to apply for an internship for my favorite childhood show! I didn’t expect to get it, but when I did, I was speechless and ecstatic! As a third grader, I would have never imagined that I was going to be interning for my favorite TV show as a student at Queens College.

Interning with Cyberchase was one of the most thrilling learning experiences of my life. I traveled to Manhattan three days a week to work from 10 a.m to 6 p.m. I watched all the episodes of the new season which aren’t even out yet! I had the opportunity to test many cool games and give my opinions about them. During my time as an intern, Cyberchase was working on augmented reality games as well as hands-on games that teachers could use in their classrooms. I learned about the animation process and the incorporation of mathematical concepts into the games. I learned about the scaffolding process and how kids need guidance to learn. I worked on a project to remake elementary school games into middle school games. I gave my input on the games and wrote analyses of mathematical lessons behind each game.

My heart dropped when the head of the educational department at WNET sent me a special thank you for my input. He said “it clicked” when I explained my perspectives and opinions. I learned so much and I was able to reestablish why I loved math so much.

My internship was truly an amazing experience and I have no one to thank but my TIME family. College isn’t easy and the TIME 2000 courses can be difficult. By the end of Calculus II, I was questioning if I was good at math or if I even liked it anymore. Interning with Cyberchase helped me remember why I love mathematics. Helping the Cyberchase team develop lesson plans for high poverty neighborhoods and games for teachers to play with their classes reminded me why I chose this path. Although TIME 2000 is a rigorous program, it has been rewarding for me because I know I will become an effective teacher.

This article was supposed to be about my experience interning with Cyberchase, but the truth is I owe it all to my TIME 2000 family. I can’t talk about my Cyberchase internship without mentioning TIME 2000 because I would never have been able to have such an amazing opportunity without the program. And so today, I want to thank every single one of the TIME 2000 members. I want to thank my cohort for being the best friends and family a person could ever ask for, the cohorts ahead of us for being our role models, and the staff for being the best support system there is to offer.

Field Day By: Timothy Ho (T-15)

At a fall 2012 TIME 2000 seminar, journal questions were assigned to the freshmen. Question 4 stated, “Describe any other questions were assigned to the freshmen. Would you be interested?” After reading Dr. Artzt’s response, I was excited to actually make this field day event happen.

As spring semester started, I thought that Dr. Artzt and Mrs. Weinman had forgotten about field day, so I didn’t bother to mention anything to them because I figured they had more important things to attend to. The lingering idea of field day kept crossing my mind,
This past June, I completed my first year of teaching at the East-West School of International Studies in Flushing, New York. East-West is a small grade 6-12 school with an international focus. On the wall of my classroom hangs a sign that reads, “Math is the language of the universe.” As a mathematics enthusiast, I have always appreciated this quote, but it wasn’t until this past summer that I truly understood its meaning. Each year, East-West sends groups of students to Asia on study abroad trips. This summer I was chosen to travel with my principal, one other teacher, and twenty-two high school students to Japan. During our eleven day tour of Japan, we spent a full day at our sister school, Nishio High School, in Aichi Prefecture.

From the moment I stepped off the airplane in Tokyo, I realized that I was unable to communicate verbally with the Japanese people. I was thankful for our English-speaking tour guide, but frustrated that I could not communicate on my own. I could not even ask simple questions; all I could say was “hello” and “goodbye.” The people in Japan were very friendly and they tried their hardest to help me, but I still struggled to understand what they were saying. For the first time, I understood how my beginner ESL students feel on a daily basis.

On the day we visited Nishio High School, I learned so much about the Japanese school system and sense of community in Japanese schools. I was given the opportunity to observe classes of my choice. Of course, I picked the math classes. I was so excited (and so curious) to see if I would be able to follow along even though the math was being taught in a different language. Within minutes of entering the first classroom, I was following along with the lesson. The teacher was speaking Japanese but I was able to follow the lesson from the board work pictured:

Do you know what was being taught? Although I was initially confused by the X’s and O’s, from “P(♥)” I realized that this was a lesson on binomial probability involving a deck of cards and that “1-¼” indicated that the complement of P(♥) was being discussed. Notice both English and Japanese characters in the board work.

Although there were similarities between my NYC school and the Japanese school, it was the differences that struck me:
- High school in Japan is three grades only. A ninth grader in Japan is called “a first grader.”
- There is no use of calculators throughout the high school curriculum.
- All students wear uniforms every day.
- Each class has about 40 students. They sit in rows and are quiet while the teacher teaches the material. Students rarely ask questions and the teacher rarely calls on students. (In the English classes there is talking/activities)
- There are no janitors; students have “service learning” where they are each assigned a chore that they complete during their lunch period before eating. Students mop, clean windows, empty trash, etc., and all participate in this together.
- Their clubs are like varsity sports/activities. Each student participates in a club activity for the afternoon.

Field Day (continued from page 2)

day in and day out, as June crept up. I was really hoping that they didn’t forget about field day because as I became more involved with TIME 2000, I grew anxious to meet the upperclassmen. Thankfully, at a spring seminar, I read the agenda and came across “Field Day” listed towards the top. I was surprised that TIME 2000 was still interested in hosting a field day event. They announced that interested students should remain after the seminar to plan the event.

I stayed and was astounded by the outcome. At least thirty students, ranging from freshmen to juniors attended the meeting (the seniors were student teaching so were not in attendance). We discussed events, activities, and items that we needed for field day such as refreshments, judges, sports equipment and prizes. When I received an email after the meeting, I was excited to be a co-ordinator for field day along with Jeanette Kimiyagarov. It was a humbling experience to oversee this process throughout the weeks leading up to field day.

I could not have been any happier as I began to see our plans come together. We held a small meeting two weeks before the event. Volunteers came prepared with progress reports. By seeing everyone actively participate during this meeting, I knew that field day was going to be a success.

June 5th, the day scheduled for Field Day, approached faster than I expected. Thankfully, it was sunny and there was no chance of rain. This meant that TIME 2000 was going to have its first official field day outdoors. Everyone showed up ready to compete and have fun. Watching everyone come together for something other than schoolwork was awesome to witness because this is what I envisioned. Field Day gave each of us an opportunity to meet new people, share some great memories, and, for once, just run around and not worry about grades. Originally, we envisioned that the teams would be separated by cohort but we decided to mix the cohorts and create four heterogeneous teams. This was a great decision because it allowed us to get to know people from other cohorts and make new friends.

I’m looking forward to having the freshmen join us at our second annual TIME 2000 Field Day in June, 2014!
Field Day
June 5th, 2013