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NAZARETH COLLEGE MATHEMATICS DEPARTMENT

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Mathematics Department
Nazareth College
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Our Newsletter

Name our Newsletter!!

A newsletter titled "Our Newsletter" is not as eye-catching as it could be. We know that you could do better than we did in choosing a name! And so we invite you to submit your suggestions. While you're at it, send us any news, stories, or pictures you'd like us to include in future issues.

Send submissions to hlewis5@naz.edu (Heather) or mkoetz1@naz.edu (Matt).

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Why I Love the Math Department

by Matt Koetz

As anyone who has ever started a new job can tell you, new beginnings can be hard. Add to that the stress of a cross-country relocation, and the potential stress level starts looking pretty high. This was the situation I found myself in last July as I left Lincoln, Nebraska to join the Math Department here at Nazareth. While it wasn't the easiest move I've ever made, the faculty and students in the Math Department made my transition a dream come true.

In January, 2005, I came to Rochester to interview for the open faculty position in the Math Department at Nazareth College. When I left, a mere 25 hours after I'd arrived, I knew that if I were offered the position I would accept. Fortunately for me, I was offered the job. As my first year at Nazareth winds down, I now have a fuller appreciation for just how amazing our Math Department is.

If I had to describe the Math Department in one word, it would be "supportive". The faculty support the students both in and out of class, in their mathematical as well as extracurricular activities. The faculty support each other, creating an atmosphere in which individuals can pursue their own interests and rely on each other for help in whatever they're doing. And the students support each other, working together, helping each other, and taking their enthusiasm out of the classroom into the community.

Math Night at Martha Brown Middle School in Fairport, NY

I started teaching in 1996 as a calculus recitation instructor. Before coming to Nazareth, I taught math at three universities, with between 1,800 and 23,000 students, in courses ranging from precalculus to differential equations. At no time have I ever encountered students who were so committed to their work, so dedicated to their department, and so supportive of each other. Every faculty member benefits from having such students; I gained even more because the students made it easier for me to adjust to my new environment.

The concern and respect that the faculty have for their students are well-placed, and the interaction that comes from this mutual respect is one of the characteristics that make it so rewarding to be a member of the Math Department.

MATT

DANIEL

FERN

HEATHER

KELLY

CHERI

SUSAN

Meet the Department

The past few years have held several changes for us. Here's what we're all up to these days!

Matt Koetz is finishing his first year at Nazareth College, fresh from earning his Ph.D. at the University of Nebraska-Lincoln. His research interests are in algebraic coding theory, or the mathematics of "Can you hear me now?" Specifically, he is interested in an abstract approach to the rather applied problem of constructing LDPC codes. Matt and his wife Shawna (a massage therapist) are expecting their first child at the end of May!

Daniel Birmajer is in his third year, after earning his Ph.D. from Temple University. He had two papers published recently in *Linear Algebra and its Applications* and the *Proceedings of the AMS*, and at this time in the semester is focused on gathering problems for Problem Solving [How many zeros are at the end of the number 10,000! and what is its last nonzero digit?] and Modern Algebra. Daniel likes to play soccer, watch (Argentinean) soccer, and read (e.g. *Mathematical Expeditions: Chronicles by the Explorers*). His wife Susana is working and taking care of the family; third-grade daughter Julieta plays soccer with the Penfield Strikers and swims; and son Milton swims, goes to karate, and is preparing for kindergarten next year.

Fern Cardella, the secretary of Biology, Chemistry, and Mathematics for nearly three years, says that she used to do all sorts of things (including throwing pottery!) but that now all she seems to do is drive her 13-year-old son to hockey practice.

Heather Ames Lewis has been teaching at Naz for nine years, and for the past six years has been going into elementary schools in Rochester to work with the teachers and students. She's been knitting up a storm trying to finish an afghan (a wedding present for some friends), and watches *Lost* on DVDs on the sly. Her husband Mark McKinzie is in his second year teaching math at St. John Fisher College; son Emmett is in kindergarten in Rochester and is an avid Star Wars fan; and toddler Quentin is a devotee of puzzles and the Marble Run.

Kelly Molkenthin (formerly Kelly Fuller) is also finishing her ninth year. Kelly has continued leading the math club, which was voted club of the year (again) in 2005! She also continues to lead the department peer mentor program that she began in 2002. Kelly spent the 2005 fall semester on sabbatical exploring actuary programs and writing a solution manual, as well as a student study guide, for a calculus text. Her daughter Lindsea just turned 7, and keeps Kelly quite busy. Lindsea has been dancing for 5 years now and is a Gananda Panthers cheerleader (Kelly is head coach of the flag football cheerleading squad). Lindsea was also just in Gananda's Youth Theater League's production of Oklahoma.

Cheri Boyd has been here 11 years. She is leading undergraduate research with four students this spring (elliptic curves and digital signatures in Cryptology; sequence alignment and phylogeny aspects in Bioinformatics), and working with the Biology, Chemistry, and Mathematics faculty on interdisciplinary projects growing sprouts and brewing beer. Cheri recently earned her green belt in Goshin Jutsu, which is a combination of traditional karate and Brazilian jujitsu. Her husband Jamie is coaching Sam's Little League team this year. Sam, who is in third grade, has been learning his multiplication tables and how to write book reports, and also does horseback riding, golf, and gardening.

Susan Riegle has been Department Chair for the past three years, mentoring and supporting the faculty, and making sure that the department runs smoothly. Susan also enjoys it when she can rest at home, visit her children and her family in Canada, and of course skiing every weekend! Her husband Ed is retired, eldest daughter Penny and Penny's husband are chemical engineers for Corning, daughter Lindsay is a surgical resident in Indianapolis, daughter Jessica is a social work major at Nazareth College, and son Alex is a pilot for the Air Force and will begin training on the F-15 at Tyndall Air Force base in Florida.

Math in the News: The Courts Uphold Pythagoras!

In November 2005, the New York Court of Appeals upheld the decision of Law Enforcement officers to use the Pythagorean Theorem in calculating distance. The case at hand involved a man convicted of selling drugs near a school. If distance were measured by the shorting walking distance ("taxicab geometry") he was over 1000 feet from the school (764 feet up Eighth Avenue, then 490 feet along 43rd Street). However, if distance were measured as the crow flies, the Pythagorean Theorem gives a distance that is less than 1000 feet from the school and so carries a stiffer sentence:

$$\sqrt{764^2 + 490^2} \approx 907.6$$

The courts upheld Pythagoras.

For more details, see the story "Pythagoras for the Prosecution" at www.volokh.com/posts/1132938765.shtml

The actual text of the Court of the Appeals ruling (six pages long, but fairly easy to follow) can be seen at www.courts.state.ny.us/ctapps/decisions/nov05/162opn05.pdf

Note: Stamp photo was taken from the St. Andrew's website: www-history.mcs.st-andrews.ac.uk/history/PictDisplay/Pythagoras.html

Alumni News

Jen Coutu Richardson ('98) and her husband Joel have been in Ithaca since 2000. In 2002 they moved into their newly built home. On April 4, 2004, Jen and Joel welcomed Joshua Charles Richardson to their family. Jen is currently working as the Assistant Director for Housing Services and Communications at Ithaca College. Jen has recently been asked to take on the additional role of serving as the departmental lead for residential life and judicial affairs as the college undergoes the implementation of a new student information system. If you would like to reach Jen, her home email address is jricha5@twcny.rr.com and her work email is jrichardson@ithaca.edu.

Rebecca Smith ('98) finished her Ph.D. at the University of Florida and specialized in Combinatorics. Rebecca tells us that her time is devoted to teaching and research

Don Young ('00) "It's amazing to me how when we were at Naz and wondering how are we ever going to get all this work done before these deadlines (it was usually the night before it was due that we would start looking at it) and feeling that our lives would become less busier when we graduated. Well, since graduation in 2000 I have been teaching 9th grade math in Fairport, I got married in August of 2003 to Brianne Clark, I have taught summer school for the past five summers, we bought a house in Fairport, I finished my masters in 2004, and now I am teaching two night classes at Naz while still trying to maintain my not so perfect golf game. There are times I wouldn't mind having those so-called busy days at Naz back when we did not have to do yard work, food preparation meant finding your Naz ID, grading papers was actually fun because it was the first time we had our own class to grade, if you felt like procrastinating you could usually find six other people to join you, and missing a deadline meant asking the professor for an extension not worrying about losing your job. I still use the Naz email, dyoung5@naz.edu. Hope all is well with everyone else and we would love to hear what everyone is up to!"

Katie Bender Leite ('02) "I'm teaching 8th grade math in the public schools in Maryland as well as teaching evening ESL classes at Howard Community College. I recently finished my masters in teaching ESOL at American University, and I strongly believe that it was my firm foundation in math education from Nazareth that played a large part in my success in my master's program as well as securing my current jobs."

Lacey (Kianka) English ('02) "I was married Sept 4, 2005

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Extra! Extra!

Look in the April 2006 issue of *Math Horizons* for the article "Organizational Profile: The Inside Scoop on Mathematics at the NSA" featuring our own alumna and National Security Agency employee **Megan (Tuttle) Waterman** ('97)! Megan received her Bachelor's Degree at Nazareth College in mathematics and economics and went on to get a Master's Degree and Ph.D. in statistics from Virginia Polytechnic University. She's been with the NSA for four years. She states that she's worked on information processing, evaluations of new technologies, and computer security and adds, "I really enjoy the flexibility of working for the government and find the work at NSA challenging and important."

The Pi Mu Epsilon logo.

Awards Ceremony

On Saturday, March 25, the Math Department held its annual Awards Ceremony in Medaille Dining Room. It was a standing room only crowd, with family and friends on hand to honor our students (and faculty!) for their achievements during the past year.

Jennifer Pennise ('00), who teaches sixth grade at Twelve Corners Middle School in Brighton, gave the morning's keynote address, titled "Are Bees Mathematicians? A Look at the Mathematics Behind Making a Honeycomb."

Pi Mu Epsilon is the national mathematics honor society, and Nazareth College has had a chapter since 1996. This year, 10 students were inducted into Pi Mu Epsilon: Courtney Ames, Elizabeth Bremer, Jessica Burchfield, Kristen Genello, Katie Newton, Lindsey Perkins, Sara Reynolds, Jillian Schneider, Mina Sifain, and Brian Snepenger. The department also surprised chair Susan Riegle by inducting her into Pi Mu Epsilon.

The Outstanding Senior Award is given to a graduating senior who "on the basis of their academic achievement in the Department of Mathematics, has distinguished herself or himself." This year the Department's decision was exceptionally difficult, and the Outstanding Senior Award was given to *three* seniors: Michael Darling, Megan Foster, and Kevin Laley.

The Sister Dorothea Kunz Award, given for making a "lasting contribution to the Department of Mathematics" through leadership and service, was also awarded jointly. The winners this year were Kevin Laley and Diane Lunman.

The final department award given at the ceremony was the Herbert J. Brauer Award in Mathematics Education. This year's recipient was Megan Rogers, who "demonstrated excellence in the pursuit of teaching certification."

In addition to the various departmental awards, two math majors received college-wide teaching awards. Kevin Laley and Angela Tessoni were given Outstanding Student Teaching Awards by the School of Education.

We congratulate all of the award winners, and thank them for making this year another great year for the Department of Mathematics!

More Math in the News: Fractals and Jackson Pollock

Jackson Pollock (1912—1956) is an artist known for his paintings made up of drips on canvas. Not long ago a collection of 32 possible Pollocks was discovered on Long Island. But are they really Pollocks?

Pollock's paintings have many fractal characteristics: patterns that repeat on different scales, and are found throughout nature. (A common example is the shape of a coastline, which appears jagged when viewed from the air, is still jagged at a smaller scale when viewed closer, and is still jagged at a much smaller scale when looked at right up close.)

Richard Taylor, a physicist, published that Pollock's paintings had distinctive sets of fractal patters (*Nature* **399** 422). Taylor analyzed six of the disputed paintings, and did not find these same patterns. While this is by no means proof that the paintings are not Pollocks, it does call their authenticity into question.

For more information, see the story "Fractals finger suspect Pollocks" at www.ams.org/mathmedia/archive/03-2006-media.html

The book pictured at the left is *No Limits, Just Edges: Jackson Pollock Paintings on Paper* by David Anfam, Susan Davidson, and Margaret Ellis. The image was taken from www.amazon.com

Math Student-Athletes Honored

Jenifer Taets, ('00) was inducted into the Nazareth College Sports Hall of Fame on April 7, in recognition of her accomplishments in swimming. The college web site states "Taets, of Horseheads, N.Y., was a four-year swimming standout who graduated as a school record-holder in three events. She ranks second all-time with more than 1,700 points and was the team scoring leader three times." (www.naz.edu/dept/athletics/halloffame/index.html). Jen herself write, "I'm still teaching fourth grade in Brooklyn but am now living in Newark, NJ. Bill and I got married in October in Watkins Glen, NY. We will be moving to Washington D.C. this summer." She said that she can be reached at jentaets@yahoo.com

Jen isn't the first math major in the Sports Hall of Fame: **Kathleen Moynihan** ('96) was inducted in 2002 for her outstanding performance in both Women's Basketball and Women's Tennis (for example, she is Nazareth's all-time leader in victories with 165 (including 83 singles wins); she won two state doubles titles, as well as one state singles title, and was invited to the NCAA National Championships in singles and doubles her last two years). Kathleen is now Head Men's and Women's Tennis Coach for Central Alabama Community College: her Men's squad won state titles in 2003, 2005, and 2006, and her Women's squad won it in 2005 and 2006. She was named Coach of the Year for Region 22 each of those years. In addition to her coaching, Kathleen currently teaches three math classes at CACC. She married Jason Thompson of Castleberry, AL in July of 2002 and had a son Collin in June of 2005.

In other sports news, three of the seven Senior Awards in sports went to math majors! **Mike DeBlois** ('06) [basketball and golf] and **Angela Tessoni** ('06) [tennis] each received the Robert A. Kidera Scholar-Athlete Award, "which recognizes the combination of athletic and academic excellence." (www.naz.edu/dept/athletics/news/200405/kideraaward06.htm) They were also nominated by Nazareth College for the Empire 8 Senior Scholar-Athlete Award. This is the first year that the conference award will be offered; winners will be announced in May.

And finally, **Kelly O'Brien** ('06) [track and field, cross country] was chosen as the female recipient of the Emily Haskins Inspirational Athlete Award! This award "recognizes athletic achievement as well as inspiration to others." (See www.naz.edu/dept/athletics/news/200405/haskins%20award06.htm)

Congratulations to all!

The senior athletes are shown below. We almost included photos of Jen and Kathleen, but they were from the mid-90s.

Mike DeBlois

Angela Tessoni

Kelly O'Brien

Around the Web — Sites We Recommend

Convergence (mathdl.maa.org/convergence/1/convergence/1/) An online magazine produced by the Mathematical Association of America, designed to help mathematics teachers use history to improve their teaching. Free, but registration is required.

Wikipedia Mathematics Portal (en.wikipedia.org/wiki/Portal:Mathematics) Part of the amazing Wikipedia site. Very accessible exposition on a wide variety of topics.

Mathworld (mathworld.wolfram.com) The "most extensive mathematics resource" online, hosted by the makers of Mathematica. Information on just about everything mathematically imaginable.

Homestarrunner (www.homestarrunner.com) No math, just a hilarious cartoon website, with numerous pop culture and 80s and 90s references. Check out Strong Bad Email.

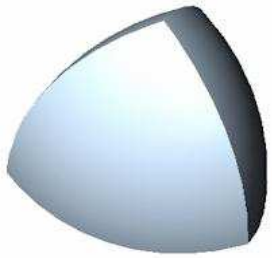
(Continued from page 3)

and became Lacey English. My husband and I have spent the last year fixing up our new home in Rochester. I currently work for a risk management company and my husband teaches high school earth science. I look forward to leaving the field of insurance so I am always looking for new opportunities. My husband and I spend most of our time working on our new home and attending weddings/baby showers for all of our friends! If you would like to get in touch with me, please feel free to contact me at lckianka@naz.edu or pinklacey33@hotmail.com."

Caitlin Marcellus ('02) "I wish I could tell you I've been splitting my days between the Italian Alps and the French Riviera, but I've actually been keeping pretty busy right here in Rochester. To quote Nelson Rich, "If I were any better I would be twins!" First off, I love my job. I work as a Personal Sales Representative for Liberty Mutual. I see myself working there for years to come, so I've started looking to buy a home in the Summerville area of Irondequoit... right up by the lake (I live in the Park Ave area right now). These days, if I'm not working late I'm at the yacht club helping to get the boat ready to go. During the summer, I race sailboats at least a couple nights a week and every weekend...on the road most of those weekends. We sail races all over Lake Ontario, sometimes for bragging rights or trophies, but sometimes to raise money for charities such as Rochester Hospice. And a small group of us head south to the Caribbean for about a week in February - to get more sailing time and to catch up on our suntans! I missed this year's trip because I was home in a cast nursing a broken foot (sailing injury of course), but I'm finally off the crutches and getting ready for summer! Check near the water if you're looking for me, or give a shout if you're in the Park Ave neighborhood! 424-6050 or Caitlin.Marcellus@LibertyMutual.com. I'd love to keep in touch with everyone!"

Franca Monachino ('03) is currently working for MedAmerica (a long-term care insurance company) in Rochester, New York. Her title is "Capital Markets Project Manager". Prior to MedAmerica, Franca worked as an Actuarial Statistician at BlueCross and BlueShield of Rochester. She is currently attending graduate school at RIT in pursuit of her Master's Degree in Finance. In addition to school, Franca is busy planning her 2007 wedding.

What are the rest of our alumni up to? Send information to hlewis5@naz.edu (Heather) or mkoetz1@naz.edu (Matt) if you'd like us to share your news and pictures in a future newsletter!



The spherical tetrahedron.

Problems 0.0

Problem 0.0.0: How many zeros are at the end of 10000! ? (uhh, that's ten-thousand-factorial) What is its last nonzero digit?

Problem 0.0.1: Consider a regular tetrahedron whose faces, instead of being plane surfaces, are spherical, with the center of each spherical face at the opposite vertex. (This is called, not surprisingly, a "spherical tetrahedron".) The intersection of any two of the spherical faces is *not* a great circle on either sphere, but rather a smaller circle resembling a line of latitude. What is the latitude of this circle?

Problem 0.0.2: Augustus De Morgan, an Indian-born English mathematician who lived in the 19th century, was once asked about his age. He replied, "I was x years old in the year x^2." In what year was De Morgan born, and how old was he in the year x^2 ?

Problem 0.0.3: Sophie started school at age 5. She spent one-fourth of her life in school, then went straight into a very successful business career. She worked for half of her life, then retired. Sophie enjoyed 16 years of retirement before her death. How long did Sophie live?