The University of Montana
Department of Mathematical Sciences

Symmetry, Student Talks and The Simpsons: a Report from an MAA Conference

by Rebekah Yates

On the morning of Friday, June 20, my husband and I got up very early and drove to Helena to attend the Pacific Northwest Section Meeting of the Mathematical Association of America at Carroll College in Helena. Since the meeting was so convenient for those of us in Missoula (Professor Jenny McNulty said it was the first time she had driven fewer than ten hours for this meeting), there were quite a few UM professors attending as well as my fellow graduate students John Hart, Michael Gilliam, and Nick Haverhals. John, Gilliam, and I were all presenting on Friday afternoon, but there were many interesting talks to attend before that time arrived. Friday morning began with Joe Gallian's talk

Ph.D. Students Rebekah Yates, John Hart, Michael Gilliam, and Nick Haverhals

"Using groups and graphs to create symmetry patterns," which I was excited to attend since my first abstract algebra class used Gallian's book. He was at least as interesting and clear in his talk as in his writing, and he gave some good

In This Issue:

And quite a bit more!

Meet the Mac Johnson Family Scholarship Winners

Amber Jessop: I haven't always been interested in science and math. When I enrolled at the University of Montana, I had anticipated a degree in literature or art, but thanks to a small scoring error on my calculus placement exam in orientation, I was sent to see Dr. McNulty about Honors Calculus. She gave me a concerned look and informed me that I hadn't actually scored as high as the others sent to her, but if I wanted a challenge, I was welcome to join. I did and regretted it for a while, especially after failing an exam for the first time, but after making it through two semesters with a descent grade, I became a serious math student.

I am on track to double-major in physics and applied math. My hopes for grad-school have been amplified from participating in space plasma research with Dr. Reisenfeld, working with Jen Fowler on the BOREALIS weather balloon project and tutoring physics for Study Jam. Thanks to aid such as the Mac Johnson Family Scholarship, I've been able to stay focused on what I love.

Meet the other recipients of the Mac Johnson Family Scholarships on page 7, where you will also find information about this scholarship program.

Math Preparation of Elementary Teachers at UM is Among the Best

by Jim Hirstein

This past summer the National Council on Teacher Quality issued a report called "No Common Denominator: The Preparation of Elementary Teachers in Mathematics by America's Education Schools." The study used a sample of 77 schools that prepare elementary school teachers to evaluate the quality of mathematical preparation on three factors: relevance, breadth, and depth. Only ten of the schools were commended for meeting the standard on all three criteria. The University of Montana, whose prospective teachers take their mathematics courses from our department, is listed among these 10 best.

The study focused on four content areas: (1) number and operations, (2) algebra, (3) geometry and measurement, and (4) data analysis and probability. Our students take a full year (9 credits) of Mathematics for Elementary Teachers that

Notes from the Chair

It's mid November and we've yet to have our first snow in Missoula. In fact, it's been a quire mild and pleasant fall. We had a 300-acre fire on Mount Sentinel last July and the burned areas still stand out by the green grasses growing there, in contrast to the brown of the rest of the mountain.

We had a very successful recruiting season last year. Ke Wu Norman joined us this fall in a tenure-track position in mathematics education. She has hit the ground running and has already gotten involved in several collaborative projects and grant applications. There's an article with further details on the next page. Kelly McKinnie, an algebraist, and Eric Chesebro, a topologist, will be joining us in Fall 2009 in tenure-track positions after they finish post-docs at Rice University. All three are excellent recruits and we could not be more pleased at the outcome of our searches.

Several of our faculty are on leave this year – Jenny McNulty, Mark Kayll, and Brian Steele on sabbatical, Leonid Kalachev on international exchange (in Japan, Finland and Russia), and Libby Knott and Adam Nyman on leaves of absence. We are very pleased to have two excellent visitors to cover some of the teaching and graduate student supervision duties while they are gone. Margaret-Ellen Messinger has joined us from Dalhousie University in Nova Scotia where she recently earned her Ph.D. in combinatorics. She's teaching a very popular course in graph theory this fall and will be teaching a graduate course in combinatorial game theory this spring that will attract a lot of interest. Jung-Miao Kuo is an algebraist who just received her Ph.D. from Indiana University.

She's teaching our 400-level algebra sequence this year as well as number theory and calculus. She is also proving to be a popular teacher.

I'd also like to report on one more undergraduate scholarship that was awarded in early summer after our spring newsletter had already been published. David Quiroga is the first mathematics winner of an Evelyn Osbourne Scholarship, a new scholarship fund for students in math and the sciences. David was the perfect candidate for this scholarship. He transferred to UM last spring and so missed out on our regular scholarships, but he turned out to be an outstanding student and a very deserving recipient.

Speaking of scholarships, our 2008-2009 Mac Johnson scholarship recipients are presented on p. 7. We have some remarkable undergraduate students and it is very gratifying to be able to offer them some financial support in addition to some much deserved recognition.
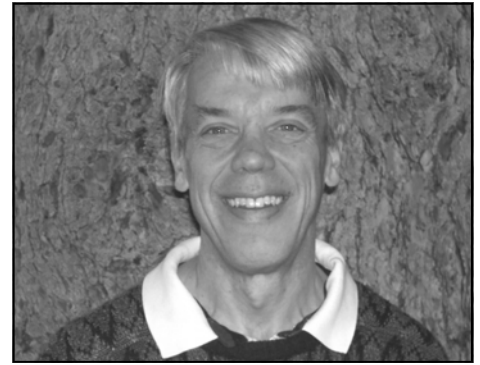
Finally, I have to put in a plug for our department T-shirts – see the Math Club column on p. 8 for details. They're very attractive and the proceeds support the Math Club.

Best wishes for the winter,

Dave Patterson
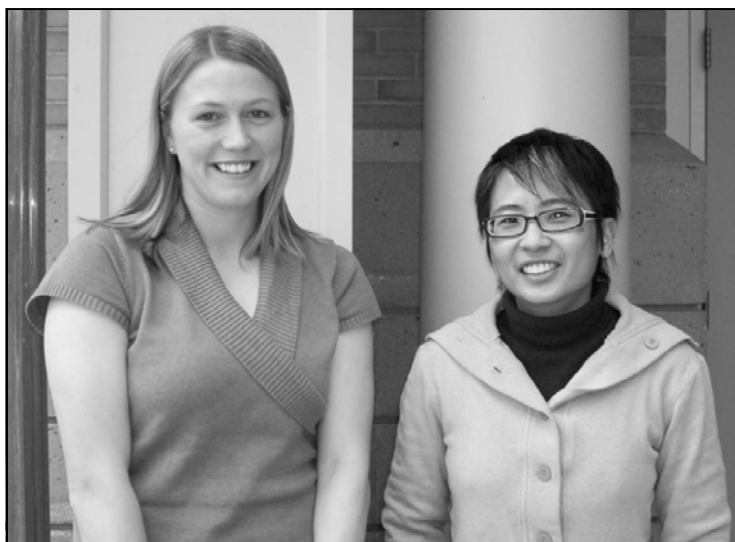
Visiting faculty Margaret-Ellen Messinger & Jung-Miao Kuo

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Libby Knott, Mathematics Education
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George McRae, Optimization
Ke Norman, Mathematics Education
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New Faculty

by Rick Billstein

The search is finally over! After searching for three years, the Department of Mathematical Sciences has filled the mathematics education position opened up by the retirement of Dr. Johnny Lott. We are happy to introduce Dr. Ke Norman and welcome her to The University of Montana from the University of Minnesota. Ke received her Bachelor of Laws degree from Beijing University of Aeronautics and Astronautics in Beijing, China. Later, she completed an M.A. degree in Counseling Psychology and an M.S. in Applied and Computational Mathematics at the University of Minnesota, followed by a Ph.D. in

*Ke Norman near Logan Pass in
Glacier National Park*

Mathematics Education under the direction of Dr. Thomas Post and Dr. Kathleen Cramer. Her dissertation title was "High School Mathematics Curriculum and the Process and Accuracy of Initial Mathematics Placement for Students Who Are Admitted into One of the STEM Programs at a Research Institution".

While in Minnesota, Ke worked on several NSF research grants involving student achievement in mathematics. She investigated whether students did better in college coming from of a high school standards-based program or a traditional high school mathematics program. Her main result is that there were no significant differences in the kind of mathematics courses students took in the long run (over 5-7 semesters), nor in the grades they earned. However, students from a traditional high school mathematics program appeared to initially enroll in more difficult university mathematics courses. Ke's dissertation study found a possible explanation for this finding: the content covered by the placement test used by the university was more aligned with traditional high school mathematics curricula than standards-based curricula.

When Ke was a middle-school teacher in China she learned how important it was to make her lessons more interesting while using the nationally uniform curriculum, and how to implement lesson plans to classes of 60 or more students. Her national and international background will make her a valuable member of the department. We welcome Ke and her husband, Christian Norman, to Montana and look forward to her becoming an active member of the department.

Math*Thematics* Curriculum Revision Completed

by Jim Hirstein

In 1992, the STEM Project (Six Through Eight Mathematics) began at The University of Montana under the direction of Mathematics Professor **Rick Billstein**. With support from the National Science Foundation, Rick brought an impressive team to Missoula and they produced a complete three-course middle-school mathematics program. The Math*Thematics* curriculum was published by McDougal Littell in 1999. The program met with great success, it has been used by over 3 million students. New national and state standards were developed, teacher input was received, and data need to be current in the real-world applications, so the National Science Foundation awarded Rick a revision grant for over $3 million that began in 2002. The new version of the program was completed this year.

Math*Thematics* integrates mathematical concepts throughout its modules: number, algebra, geometry, probability, and statistics. Each book contains eight modules with intriguing topics (*Wonders of the World, The Art of Motion, and Visualizing Change* are examples). In addition to the textbooks, the program includes extensive teacher resource materials: warm-up exercises, application exercises, study guides, quizzes and tests, assessment tools, and technology activities. Other books provide labsheets, Spanish resources, and classroom demonstration transparencies. There are over 23 separate books included in the revised materials. The student materials are available online. CD-ROM materials are available for

student tutorials, student activities, and generating quizzes and tests. Three professional development videos were produced for use with teachers and parents. These videos were filmed in actual classrooms in Chicago. Rick and his team have carried their application-based mathematics to the next generation and the materials should be around for years to come.

Honors Calculus in two Acts

by Bharath Sriraman

The department of mathematical sciences offers two courses designated by the Davidson Honors College as "honors". Historically this is one section in our yearlong Calculus sequence. I impulsively volunteered to teach the course when it became available, and taught it for two academic years, 2006-08. The first reflexive question that arose in my mind was: what makes a course an "honors" course? This question was answered by Jenny McNulty, who also graciously loaned me the various materials she had utilized in the course.

An "honors" course is meant to challenge the students above and beyond the expectations of the regular course, as well as incorporate a service component that entails giving back something meaningful to the community. The course also comes with a seminar, in order to complement the course curriculum. Another aspect of the course is that the instructor can play an active role in selecting students for the course based on the outcome of the placement examinations and a small interview. George McRae and Dick Lane were helpful in this endeavor on occasions during the summer when I was out of the country.

The course is predominantly populated by freshmen who could be labeled "high" achievers if one takes standardized tests and high school grades as the sole measure. Most of these freshmen had already taken a year of Calculus in high school and scored 3 or 4 on the AP examination. However I opened the course to those that had taken pre-Calculus and expressed a strong interest in mathematics or precocity for mathematical thinking. In addition, both years, the course had at least one non-traditional student, typically a graduate student at large from a different department on campus. These happenstances brought a dose of heterogeneity to the course.

So, how does one teach Calculus to those that already have learned Calculus? Without getting into Clintonesque quagmires on the meaning of the word "learned", my approach was to incorporate my natural biases on what a "real" Calculus course ought to be (pun intended). Does knowing the computational mechanics of limits, derivatives and integrals constitute knowing Calculus? Partly so, but not completely.

Given my natural inclination to lean on the historical side of the development of ideas, students were challenged to dig into the origins of the methods, learn historical methods such as using geometry to compute quadratures; trigonometric series from the Kerala school; the ingenious methods of Newton, and the Bernoullis, among others. Geometric methods were continually emphasized by incorporating Edwin Abbott's *Flatland,* and Ian Stewart's *Flatterland* into the seminar component of the course. These books bring into the foreground a discussion of paradoxes that have plagued mathematics, and of ways in which they can be overcome, starting with Achilles and the tortoise onto Einstein riding his "light"-train.

Last but not least, by using sequences (the "atoms" of analysis), we proved nearly all the results that one encounters in the first year of Calculus. To the uninitiated, try proving the chain rule using epsilon methods, and then prove it using the sequence definition, and compare the two! In a nutshell, the major foci of the course were proving everything using geometric methods from history, sequences and series.

How did this go over with the students? There was a natural resistance from those that expected the course to regurgitate the computations. But with time the resistance gave way to curiosity and we were successful in pushing one another to learn as much as possible. Two of the graduate students at large, Ben Harris and Amy Minto, are now in PhD programs in economics and business at Simon Fraser University and the University of Oregon, respectively. One of the undergraduates, Rafael Villareal-Calderon, authored a paper on the history of logarithms which appeared in *The Montana Mathematics Enthusiast* (vol. 5, nos. 2&3, see http://www.math.umt.edu/tmme). A handful of the students became math minors, and some decided to double major in mathematics. So, one could say there was a fair amount of success in channeling the undecided mind into our orthodoxy!

What about the service component? Jenny McNulty had taken the initiative to design teaching modules with the students for incorporation in the local middle schools. I carried this on by teaming up with Gary Roberts and Catherine Schuck (from Lewis and Clark and Rattlesnake Elementary Schools), and putting students into groups to design lessons. The core mathematical topics we focused on for these teaching modules were irrationality and sums of powers. The former being a route to emphasize constructing the real number line, and the latter being a natural pre-cursor to the integral and Bernoulli polynomials. It was my belief that the Honors Calculus students needed to understand these topics well before they could teach it to 5th graders.

The lessons we ended up designing examined the golden ratio in relation to the regular pentagon and recursive sequences, and sums of powers in relation to generalizing to n dimensions. The lessons were implemented in weeklong modules at the two schools. Again, this ended up being a significant amount of work for all those involved, but the feedback from the school teachers and the honors Calculus students was that it was a positive experience.

Some final thoughts: One of our undergraduates from China, Lei Pan, who was in Honors Calculus II, strongly remarked that the experience in the schools was eye opening for him, especially in the way U.S. teachers encouraged students to think, explore and communicate mathematics, quite different from the classroom environment in China, which emphasized conformity and repetition.

In keeping with the subject of "honor", Lao Tse, the 4th century BC philosopher, remarked "*Fail to honor people, they fail to honor you*". It is time our society honored the work of our teachers.

A L U M N I   N E W S

Colonel **Heath Bottomly** (BA 1941), better known as Colonel Bo, lives in the San Jacinto Mountains of Southern California, where his wife Penny presides over 100 crafting and quilting local ladies while he is writing books and stories. He just published his second adventure book, *Blind Glory*, and has other books in print; details are on his website http://colonelbowarstories.com.

To quote a bit from his letter about his time at UM, 1937-41 (when UM was still Montana State University): "I was Dr. N.J. Lennes' assistant along with a close friend, Joe Hashisaki. Dr. Harold Chatland was our faculty advisor and Drs. Shallenberger and Little were the Physics Department downstairs in Craig Hall [which is now called the Mathematics Building]. Dr. Merrill was the other professor in Math. … I will be glad to come home to speak sometime as a rep of the Greatest Generation with memories of the Montana Frontier when … my Pop was on the Supreme Court and 7 Bottomly were grizzlies." The Math Club would love to have you talk!

Rebecca **Burkala** (MA 2006) is now in her second year as a full-time tenure track math professor at Rose State College in Oklahoma City, where she is living with her husband Evan. They just had their first son, Jake, on August 8, 2008. Congratulations! And I cannot help being impressed by the birth date: 8-8-8.

We are sad to report that **Philip Edouard d'Aquin** (BA 2006) passed away August 12, following a car accident in Butte. He had been on his way back to the University of Montana to pursue a master's degree in history (in which he had earned a minor as an undergraduate student).

Jean M. Garmoe (Popham) (BA 1950) is retired and married to Robert H. Garmoe, also a Montana alum. They have three daughters, all college graduates, and seven grandsons, of whom three are college graduates and the others are still in school. What a nice legacy!

We recently heard from **Ed Risse**, class of 1960, who earned a B.A. in mathematics from UM in 1961, and later on J.D. and L.L.B. degrees from the University of California at Berkeley. He took several classes with Joe Hashisaki, who was one of his all-time favorite professors. He writes that he used his training in Math and in Law "to keep lawyers and scientists from obstructing citizen's attempts to understand and evolve functional human settlement patterns." Ed is the principal of SYNERGY/Planning. In 2000 he published the two volume treatise *The Shape of the Future* and is now completing a three volume series called *TRILO-G*. Together they articulate what his graduate students call "the unified field theory of human settlement patterns." His profile and links to 131 columns on the topic of human settlement patterns – two dealing specifically with Western Montana – can be found at http://www.baconsrebellion.com/Wonks_Risse.php. Check it out!

*Please send in your news; we're always glad to hear from you, and **your classmates and professors would love to read about you** in this column.*   *N.V.*

Summary 2009 Graduate Courses for Secondary and Middle School Math Teachers

The Department of Mathematical Sciences plans to offer several three-credit courses for secondary and middle school mathematics teachers during the summer of 2009. The courses will be taught by Professors Jim Hirstein and Ke Norman (contact info below).

June 15 – July 17, 2009 (on-line course)
Math 510 *Problem Solving for Teachers*
This course is designed for secondary and middle school mathematics teachers. We will examine strategies for solving mathematics problems and the role of problem solving in the secondary mathematics curriculum. (Instructors: Jim Hirstein and Ke Norman)

June 15 – 19, 2009 (on campus), plus one on-line day (July 10)
MATH 501 *Technology in Mathematics for Teachers*
This course will explore the use of technology in the teaching of mathematics. Calculator lessons and computer software will be available to investigate models appropriate for secondary and middle school teachers. (Instructor: Jim Hirstein)

June 22 – 26, 2009 (on campus), plus one on-line day (July 17)
MATH 504 *Investigations in Number Theory*
This course is structured around a variety of materials that explore the relationships in the multiplicative structure of the integers. We examine materials and methods that are appropriate for secondary and middle school students. (Instructor: Ke Norman)

For more information, look at http://www.umt.edu/math/graduate/summer.html, or contact the instructors, Dr. Jim Hirstein (hirsteinj@mso.umt.edu, 406-243-2661) and Dr. Ke Norman (Ke.norman@mso.umt.edu, 406-243-4818).
You can register for these courses, starting January 26, at www.umt.edu/ce/summer/ (search for courses in Mathematical Sciences).

Online Giving

With tuition increases continuing to far outpace inflation, scholarships are vitally important for our students. If you wish to make an online donation to the Department of Mathematical Sciences and its various programs, please visit http://www.umt.edu/math/giving. When you fill out the electronic giving form, please pay special attention to the section "**How would you like to designate your gift?**" to ensure that your gift really reaches the math department and its students. For donations by mail, please use the enclosed Alumni Reply form.

Wintersession Course
January 2009
Adjunct instructor Richard Lane will offer in January a 1-credit upper division course called *Exploring Mathematics with Maple*. This introduction to the powerful computer algebra system Maple will meet TWR 1-3pm
January 13-22, 2009.

Professor Jon Graham earns Wildlife Conservation Award

by Nikolaus Vonessen

The Montana Chapter of the Wildlife Society annually gives its Wildlife Conservation Award to an individual or non-governmental organization for past, present, or ongoing efforts that enhance wildlife conservation in Montana. The 2008 recipient is Statistics Professor Jon Graham. Here are some quotes from the award citation:

"Beyond his reputation as an exceptional statistics professor, Dr. Graham has also earned accolades for his contribution to wildlife and biological research at the University. He often gives time to graduate students to consult on their research projects, and supports faculty in developing research programs that can yield results with strong inference."

"The Wildlife Biology Program and the [Division] of Biological Sciences benefit tremendously by his preparation of undergraduate and graduate students with the kind of statistical foundations they need to develop and deliver high quality research. His consultation on graduate and ongoing research has earned him coauthorship of some of the best wildlife work showcased by the University of Montana."

"Jon was central to developing the working landscape models that illustrate the potential effects of oil and gas development on sage-grouse populations in Wyoming and Montana. His work in this field has provided academics, land managers, land owners, and energy developers with the tools they need to understand the wildlife consequences of energy development."

"By strengthening the research products and wildlife professionals developed at the University of Montana, Dr. Graham directly contributes to wildlife conservation in Montana, in the United States, and in some cases – across the world."

Congratulations, Jon! We are proud of you!

Department News

Authentic Architecture. The addition to UM's Mathematics Building recently received a 2008 Historic Preservation Award from the Missoula Historic Preservation Commission. The math building, designed by famed Missoula architect A.J. Gibson, was originally the Women's Hall when it was constructed in 1903 as one of the four original structures on campus. Architects **Mike Gilbert** and UM's **Jameel Chaudhry** designed the new addition to make the building comply with the Americans with Disabilities Act. The addition includes rest rooms, office space and elevators. The challenge was creating a modern addition while still respecting the historic architecture. The end result, completed in 2007, is what Gibson biographer and UM Professor Rafael Chacón described as "homage to Gibson." (Reprinted with permission from University Relations' *Main Hall to Main Street*.)

Professor **Libby Knott** accepted a tenure-track position as full professor at Washington State University in Pullman. Good luck at your new job, Libby! We will be missing you.

In addition to her many other duties, **Sharon O'Hare**, the director of the department's Math PiLOT placement/advising program and the Math Learning Centers, was recently named director of the University's new tutoring program, STUDY JAM. STUDY JAM focuses on providing group study opportunities and tutoring for students in high enrollment courses, many of which require quantitative skills. The study tables operate three nights a week in the UC Commons, offering support for students in statistics, chemistry, physics, economics, biology, and Spanish courses. The response from students has been enthusiastic: on average, over 150 students visit a STUDY JAM table each week. *N.V.*

Symmetry - *Continued from page 1*

examples of ways he has involved undergraduates in research, an area in which I am interested since I plan to teach undergraduates when I finish my degree. The rest of the morning consisted of various short talks interspersed by coffee and cookies.

After lunch, Sarah Greenwald treated us to many laughs in her talk "Good News Everyone! Mathematical Morsels from The Simpsons and Futurama," which was followed by more sessions of short talks, including John's, Gilliam's, and mine. I must admit that since this was my first talk at a non-UM conference, my ability to focus on the other talks was directly proportional to the time remaining until my talk.

When it was finally time for me to present, I was happy to see many familiar faces in the audience. My talk, "Weakly Peripherally Linear Mappings between Uniform Algebras," focused on the research I did last spring and through the early summer with my advisor, Professor Thomas Tonev, in which we were working on finding sufficient conditions under which a mapping between algebras is an isomorphism. The talk went well, and I am glad to have been able to present my research to a larger audience. (During the rest of the summer, with the support of a Summer Research Scholarship, Professor Tonev and I extended these results to more general results and I am

Meet the Mac Johnson Family Scholarship Winners

The Mac Johnson Family Scholarships (currently $1,000 each) are given annually to math majors who have completed at least one semester of calculus and have shown exceptional talent in mathematics. You already read about one of this year's recipients, **Amber Jessop**, on page 1. Below, the other three scholarship winners shortly introduce themselves.

The Mac Johnson Family Scholarships were endowed by the family of Mac Johnson, who earned a bachelor's and master's degree from the University of Montana (in 1931 and 1961) and taught mathematics at Cut Bank High School, and math and aviation at Northern Montana College. His wife Virginia also attended the University of Montana before graduating from Northern Montana College. If you want to know more about the interesting life of Mac and Virginia Johnson, have a look at an article by our former chair Gloria Hewitt in the Fall 1998 Newsletter (on page 4, http://www.umt.edu/math/Newsltr/fall98.pdf#page=4).

My name is **Katie Banner** and I am originally from Corvallis, Oregon, but have spent the majority of my last three years here in Missoula. I absolutely love the University of Montana, and am now a senior in the Mathematics program. I am planning on staying here for an extra year to finish my studies with options in applied math, statistics, and optimization. After I graduate, I would love to go to graduate school somewhere in the Northwest, and have a strong inkling that I would enjoy being a professor someday. My favorite subject in math is calculus, and I had the opportunity to help instruct a Calculus II class last semester, which was a very fulfilling experience. The Mac Johnson Family Scholarship helps make it possible for me to attend UM and I am very grateful to have been selected for it. Thank you for this opportunity.

Morgan Eichwald: I was born and raised in Missoula, where I attended Sussex School and Hellgate High School. Coming to the University of Montana as a Presidential Leadership Scholar at the Davidson Honor's College, I have been able to pursue many extracurricular interests while working towards my degree in Mathematics. In 2006 I participated in the "Vienna Experience," a study abroad program with the UM Chamber Chorale. I also spent a semester studying at Barnard College of Columbia University in New York City. Although my academic studies have been focused on pure mathematics, another interest of mine is in astronomy and astrophysics. I am also passionate about ballet; during my senior year, I am training at the San Francisco Conservatory of Dance while completing my academic classes at the University of California at Berkeley. The financial support from the Mac Johnson Scholarship has helped make it possible for me to take advantage of this wonderful opportunity. Eventually I plan to attend graduate school in either math or astrophysics, and pursue a career in research.

Nick Paterno: I am from Puyallup, WA, a town of 35,000 an hour away from Mt. Rainier. In the future I plan on attending graduate school at the University of Washington to earn a Master of Science degree in applied mathematics or numerical analysis. I hope to do research at a national laboratory or in a mathematics based field. At UM, I have participated in the *Montana Integrative Learning Experience for Students* program where I helped with the beginning of a project to write a computer model of molecular kinetics, specifically a glutamate transporter. I also did a brief analysis of the Fitzhugh-Nagumo Equations in my Nonlinear Dynamics class. For the past three years, I have also worked as a tutor in the Math Learning Center. In my spare time I attend Wesley House, go rock climbing, run and hike. I even climbed Mt. St. Helen's this past summer. When I leave UM in May, I will have a bachelor's degree in Math with emphases in pure and applied mathematics. Coming from a large family, I greatly appreciate the financial support I have received through this scholarship.


Math Preparation — *(Continued from page 1)*
includes all of these topics in depth. Of the 77 schools in the study, 36 were judged to fail on all measures – 15 of them required no elementary mathematics content course at all. The report calls the variation in mathematics requirements across the sample unacceptable. They recommend extensive study of mathematical content and one well-aligned methods course on the teaching of mathematics. To address the goal of improving mathematics teaching at the elementary school level, UM is proud to provide a model that meets and exceeds the basic criteria.

Symmetry — *(Continued from page 6)*
happy to report that we submitted a paper entitled "Norm-Linear and Norm-Additive Operators Between Uniform Algebras" in September. I will be presenting our results from this paper at the Joint Meetings of the MAA and the AMS in Washington, D.C., this January.)

Overall, the conference was a good learning experience and a good time to meet other mathematicians from the Pacific Northwest section of the MAA. I'm grateful I had the opportunity to attend and would like to thank the department for the travel support.

Rebekah Yates is a Ph.D. student; she plans to graduate in Spring 2009.

Math Club Corner

http://www.math.umt.edu/mathclub/
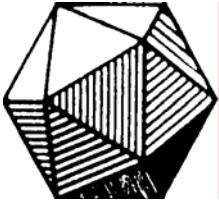
The Math Club presents a …
Shamelessly Commercial Ad!

Many of us mathematicians take secretly (or not so secretly) a bit of pride in being nerds. And what better way to let the world know that you are a "Grizzly Mathematician" than with a genuine T-shirt from our Math Club! Besides, the prices are quite reasonable, and the modest profit benefits the activities of the Math Club.

All T-shirts feature the small inscription "The University of Montana Grizzly Mathematician" on the front, and the logo of the math department on the back. The T-shirts are available in short-sleeve ($13) and long-sleeve ($16), in various colors (white, green, red and blue), and in sizes S, M, L and XL. But since we are not a commercial enterprise, we do not have all possible 32 combinations in stock; in fact, our selection is heavily skewed towards T-shirts which are large, white, or short-sleeve. If you are interested (we hope you are!), please give the math office a call at (406) 243-5311 to choose from our stock at hand. Afterwards, please send your check (including $4 for shipping and handling, payable to "Pi Mu Epsilon Fund")

to: Department of Mathematical Sciences, The University of Montana, Missoula, MT 59812-0864.

Math Majors Christina Anderson, Keith Steele, Anna Duncan and Nick Paterno model the Math Club T-Shirts

The Math Club is always looking for outside speakers, especially alums, to talk about their professional lives, and how they use mathematics or statistics in their careers. Please let me know if you can help out! (406-243-6222, nikolaus.vonessen@umontana.edu)

The University of
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