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Editor: Fernando Gouvêa, Colby College; fgouvea@colby.edu

Managing Editor: Carol Baxter, MAA; cbaxter@maa.org

Senior Writer: Harry Waldman, MAA; hwaldman@maa.org

Please address advertising inquiries to: Carol Baxter, MAA; cbaxter@maa.org

President: Ann E. Watkins, California State University, Northridge

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Letters to the editor should be addressed to Fernando Gouvêa, Colby College, Dept. of Mathematics, Waterville, ME 04901, or by email to fgouvea@colby.edu.

Subscription and membership questions should be directed to the MAA Customer Service Center, 800-331-1622; e-mail: maaq@maa.org; (301) 617-7800 (outside U.S. and Canada); fax: (301) 206-9789.

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FOCUS

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FOCUS Deadlines

	March	April	May/June
Editorial Copy	January 15	February 4	March 15
Display Ads	January 29	February 25	March 25
Employment Ads	January 15	February 11	March 11

Education and Publications Council Chairs Appointed

Jim Lewis, chair of the Department of Mathematics at the University of Nebraska-Lincoln has been appointed chair of the MAA's Coordinating Council on Education, replacing Carl Cowen, the newly elected First Vice-President. The Council coordinates and advises the work of the more than twenty committees of the MAA that deal with educational matters such as the mathematical education of teachers (COMET), the undergraduate mathematics curriculum (CUPM), articulation and placement, and research by undergraduates.

W. J. "Jim" Lewis is professor and chair of the Department of Mathematics and Statistics at the University of Nebraska-Lincoln. Under his leadership the department won the University of Nebraska's 1998



Jim Lewis

University-wide Department Teaching Award as the outstanding teaching department in the four-campus university system. His department also won a 1998 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring. Lewis is also an award-win-

ning teacher having received teaching awards from UNL and from the MAA. Lewis has also received awards from the UNL Chancellor's Commission on the Status of Women and the Lincoln-Lancaster County Women's Commission for his support of opportunities for women in the mathematical sciences.

Lewis was a principal investigator for the Nebraska Math and Science Initiative, Nebraska's NSF-funded SSI. Currently he is a co-PI for an NSF grant to revise the mathematics education of future elementary school teachers at UNL. He is a past chair of the American Mathematical Society's Committee on Science Policy and currently serves on the AMS Committee on Education. Lewis was co-chair of the NRC Committee on Science and Mathematics Teacher Preparation that produced the report, *Educating Teachers of Science, Mathematics, and Technology: New Practices for the New Millennium*. He was chair of the Steering Committee for the U. S. Department of Education funded CBMS project that recently released the report, *The Mathematical Education of Teachers* and co-chair of the National Summit on the Mathematical Education of Teachers. He received his Ph.D. in mathematics from Louisiana State University.

MAA president Ann Watkins also an-



Jerry Alexanderson

notices the appointment of Jerry Alexanderson, chair of the Department of Mathematics at Santa Clara University and former MAA president, as chair of the Council on Publications. Professor Alexanderson replaces Bill Watkins, who felt that the MAA has seen enough of the Watkins family for the time being. The chair of the Council on Publications, working with Associate Executive Director Don Albers, oversees the work of the MAA's book series and journal editorial boards.

G. L. Alexanderson has most recently served the MAA as president (1997-98), having previously served as secretary for seven years. From 1986 to 1990 he edited *Mathematics Magazine*. Among his 13 books (often coauthored or coedited), three have been published by the MAA. Currently he is editor of the Spectrum Book Series. Outside his MAA life he serves on the Phi Beta Kappa Senate and chairs his department of roughly 25 faculty at Santa Clara University, having now chaired that department for 35 years. He likes mathematics, books and dogs, not necessarily in that order of preference. ■

William B. Smith Selected Executive Director of the American Statistical Association

The American Statistical Association (ASA) has named Professor William B. Smith of Texas A&M University its Executive Director. Dr. Smith becomes the twenty-third Executive Director and Secretary of the Association, succeeding Ray A. Waller, who retired at the end of October.

Smith is an internationally known leader in the statistical profession, having worked in academic, administrative, and managerial capacities. He plans to increase efforts to enhance the reputation and health of the discipline and support the ASA's membership as well as other statisticians.

"I view the American Statistical Association as our leading professional organization, one with the responsibility and opportunity of effectively representing our discipline not only to its members, but also to broader communities," said Smith. "As data gathering itself has changed dramatically in only a few years, so must our community meet this opportunity for unprecedented use of statistics."

Prof. Smith received his Ph.D. from Texas A&M University in 1967 and has been involved in the Department of Statistics at Texas A&M as Professor and Chairman and then Executive Associate Dean of the College of Science. Smith has held visit-

ing faculty positions in Japan, France, and Argentina, and served on the faculties of Lamar and Southern Methodist Universities. He also served as Program Director for Mathematical Sciences at the NSF.

An active ASA member since 1965, Smith is a Fellow of the ASA and an Elected Member of the International Statistical Institute. ■



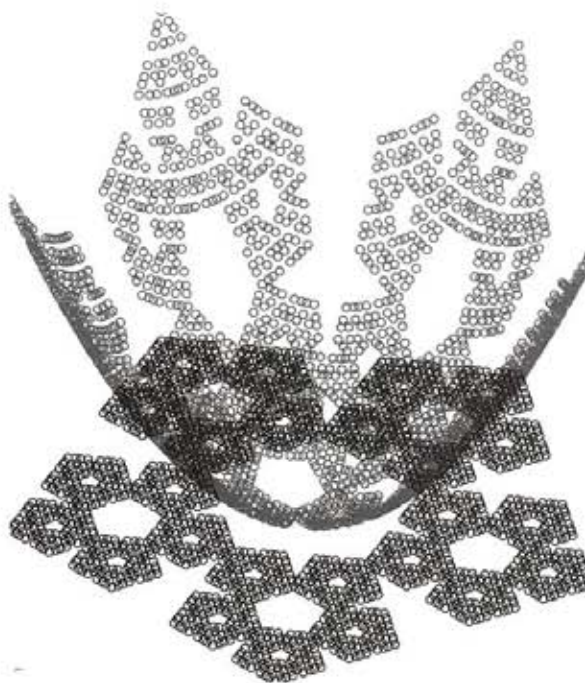
William B. Smith

MathDL Celebrates Its First Birthday

By Lang Moore

Go to Issue 2 <http://www.joma.org> the Journal of Online Mathematics and its Applications (JOMA) in early August and move the mouse over the picture of the woman leaning out of a window. You will see her gracefully toss a melon into the air. It rises, pauses at the top of its trajectory, then rushes down to smash on the sidewalk. A click on the word velocity below the picture leads you to a learning module by Larry Gladney and Dennis DeTurck. Back on the issue home page, a click on the article *Math and Architecture*, brings up a picture of two young women lounging on an Anton Gaudi three-dimensional mosaic lizard in Parc Güell in Barcelona, Spain. The two women, Melissa Shearer and Hayley Rintel, were students at Franklin and Marshall working on a summer research project. The article is their richly illustrated report on the mathematical aspects of the architecture of Spain and Italy. Needless to say, JOMA is not your ordinary mathematics journal!

JOMA is part of the MAA's new Mathematical Sciences Digital Library (MathDL) project, which is finishing a



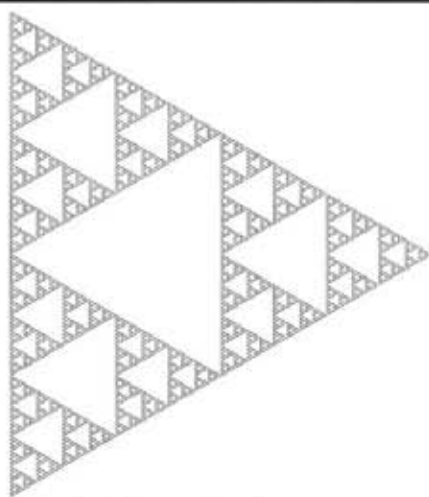
Graph of a paraboloid drawn over a pentagasket.

year of intense development and change. Math Forum, which hosts the Library's web pages and provides software development, was acquired by Drexel University in May. Not only did this result in a physical move for Math Forum to new quarters on the Drexel campus, but they brought an entire set of new servers online at the same time. Nevertheless, the

second issue of JOMA appeared just before Math Fest in Madison, and other main components of the library have made their appearance as well.

As of early November, The Catalog of Commercial Products had a long listing of titles in undergraduate mathematics published by several publishers. The books are organized by subject area from Beginning Algebra through Calculus for Life Sciences to Fourier Analysis and Wavelets. Listings for the other major publishers are scheduled to appear by the end of 2001, and listings for mathematical software and hardware will follow soon thereafter. Each listing contains, in Amazon.com style, the image of the book's cover, a description of the book, the table of contents, and a link to the publisher's website. Many have prefaces included as well. Reviews will begin to appear early in 2002. Turn to the Catalog when you are planning courses for Fall 2002!

The third component of MathDL is Digital Classroom Resources. The first items in Resources appeared in December, 2001. Eventually, this component of the



Standard Sierpinski gasket.



A $\pi/8$ loxodrome on a sphere.

Library should become the largest, providing an extensive array of reviewed, interactive online materials.

A major goal of MathDL is to increase the number of authors and users of high quality online materials. To this end, we are developing a series of demonstration applets with accompanying learning materials. We will use them to discuss standards for applets and their incorporation in larger learning objects using Java Script. The resulting Online tutorials will be used in a series of workshops for prospective MathDL authors. Other possible Library initiatives include an Online magazine on the history of mathematics, a series of Online interactive books, and a regular feature using both Online and physical resources to create timely interactive learning environments in mathematics.

For now, JOMA remains the center of

MathDL attention. If you have not already done so, try your hand at the differentiation puzzles by created by Franz Embacher and Petra Oberhuemer of the University of Vienna. [Go to Browse Mathlets and select Concept of Derivatives. Their mathlet is entitled Differentiation.] Or try the Complex Function Grapher by Andy Bennett of Kansas State University featured on the table of contents of JOMA, Issue 2. After the completion of the 2001 volume, JOMA will switch to a continuous publication mode. Materials will be posted as soon as the refereeing/editing process is complete. So, plan to check the site regularly for new articles.

We will be celebrating the first year of JOMA with a panel of JOMA authors at the Annual Meetings in San Diego, Monday, January 7, 9:00 a.m. - 10:30 a.m. The panelists are Dennis DeTurck (University

of Pennsylvania), John Kiltinen (Northern Michigan University), Tom Leathrum (Jacksonville State University), and David Smith (Duke University), Editor of JOMA. ■

Lang Moore is Associate Professor of Mathematics at Duke University, currently on leave at the MAA as a Visiting Mathematician. He is PI on the MathDL grant and Executive Editor of the Library. Together with David Smith at Duke, he directs the Duke Connected Curriculum Project, a project that has created a library of over 100 interactive online modules in undergraduate mathematics. He is also PI of the Duke Post CALC Project, which has created similar online interactive materials for high school students who have finished a year long calculus course and still have time left in their high school careers.

Images provided by Dennis DeTurck.

Update on SIGMAA on RUME

SIGMAA on RUME was formed as the Association for Research in Undergraduate Mathematics Education (ARUME) at the Annual Meeting of the AMS/MAA in San Antonio, Texas on January 14, 1999 and subsequently became a model for the formation of special interest groups (SIGMAAs). As stated in its Charter, this SIGMAA is "for the purpose of encouraging quality research in undergraduate mathematics education (RUME) and its application in teaching practices. SIGMAA on RUME provides organizational support for researchers conducting RUME and to those interested in using the results of RUME. It also provides organizational support for the dissemination of the results of this research."

SIGMAA on RUME took over the organization and sponsorship of the Annual Conferences on Research in Undergraduate Mathematics Education that were begun by the RUMEC group. The sixth annual such conference was to be held in Chicago this past September, but like many other conferences scheduled shortly after the September 11 tragedy, it had to be canceled. Plans are now underway to hold the next annual confer-

ence prior to MathFest 2002 in Vermont. Stay tuned for details. These conferences are a good opportunity for researchers in undergraduate mathematics education to present their work and network with colleagues, as well as to hear from plenary speakers who are leaders in the field. Topics vary from year to year, but have addressed such areas as students' difficulties with concepts in calculus, linear algebra, differential equations, and number theory, preservice teachers' conceptions of variable, the effects of writing on calculus students' understandings of limit, and graduate students' mathematical beliefs.

Since March of 1999 SIGMAA on RUME has maintained an extensive Web site at <http://www.maa.org/sigmaa/arume/index.html>. This page is most easily reached by going to the MAA Online home page and clicking on the new SIGMAAs button in the lower right-hand corner. It is maintained by the SIGMAA on RUME Website Committee under its able Chairperson, Shandy Hauk of the University of Northern Colorado, with help from other SIGMAA members. If you go there, you will find links to other

conferences on the teaching and learning of mathematics, many with a research emphasis. You will also find a searchable database of research in mathematics and statistics education (nearly two thousand entries as of May 2001), thanks to the combined hard work of the Literature Committee under its Chairperson, Draga Vidakovic of Georgia State, with special help from Eric Hsu of San Francisco State and Joan Garfield of University of Minnesota. If you search on "calculus" you will get 26 hits, on "abstract algebra" 5 hits, but beware if you search on "statistics" you will get 1041.

Those interested in academic positions will find links to mathematics education job listings, as well as to advice on the job search process. They will also find an extensive list of journals publishing research in mathematics education with links to affiliated web sites. There are a variety of web resources with links to such sites as ERIC, and ZDM, where you can do further literature searches. SIGMAA on RUME welcomes new members and maintains an active listserv on which members often consult each other with research-related questions. ■

National Summit on the Mathematical Education of Teachers

By Mike Breen and Annette Emerson

On November 2 and 3, almost 300 participants and speakers gathered near Washington, D.C. for the National Summit on the Mathematical Education of Teachers. The Summit was an intensive two-day event, hosted and organized by the Conference Board of the Mathematical Sciences. The purpose of the Summit was to launch the document, *The Mathematical Education of Teachers (MET)*, and to stimulate the mathematics community into making the mathematical education of teachers a priority for this decade.

Participants formed a diverse group, geographically (representing 35 states, the District of Columbia and the Virgin Islands), by specialty (mathematics, mathematics education, and education), and by affiliation (universities, four-year colleges and two-year colleges). Together, attendees heard some of the recommendations of MET, the challenges involved in implementing those recommendations, and efforts underway now at several institutions to improve the mathematics education of teachers.

The Summit consisted of plenary sessions, addresses, and working sessions. The plenary sessions and addresses were designed to frame the issues and problems associated with the mathematical education of teachers. The 18 working sessions were led by people from institutions that have had success improving that education. During these sessions, participants learned the specifics of a program and how a project could be applied at their own institutions. Topics from the working sessions were wide-ranging, and included elementary, middle and high school teacher preparation, and partnerships between higher education mathematics departments and school districts, schools of education and two-year colleges. Summaries and pictures from these sessions are at www.maa.org/cbms.

The Summit began with remarks from Jim Lewis, who was co-chair, along with Glenda Lappan, of the Summit Steering Committee. Mindful of the duties and

workload awaiting participants upon their return home, Jim asked people to keep two questions in mind during the Summit: What have we learned that should be shared with a wider audience back home? What is our first action item when we return home?

Roger Howe, also a member of the Summit Steering Committee, pointed out that there are serious challenges facing the improvement in the mathematics preparation of teachers. For example, it would be desirable for teachers to know algebra, but many don't know arithmetic. He hoped that mathematics courses for teachers would be "rigorous and friendly" and that mathematics departments "get incentives right," that is, that the mathematics education of teachers would not become a burden on those who have to develop or implement new programs.

Ed Ahnert, president of the ExxonMobil Foundation, spoke about the need ExxonMobil has for mathematics, science and engineering and pointed out that this need is shared by the country and its citizens. (The Summit was supported by grants from the ExxonMobil Foundation and the National Science Foundation.)

William "Brit" Kirwan, president of the Ohio State University, began his talk by noting the "math wars" that have flared up recently. Kirwan said that he has seen wars fought for many reasons, but this is the first time that wars have been fought over mathematics education. He stated that "teacher education in mathematics should be a central mission of our mathematics and education departments" and outlined six strategies to improve mathematics education: reshape and restructure the undergraduate curriculum, increase diversity in mathematics departments, create opportunities for second career mathematics teachers (for example, people coming from industry), increase involvement with school districts and their teachers, increase research in mathematics education, and individualize faculty workloads.

Deborah Ball and Hyman Bass gave many examples to show how much mathematics a teacher must know to teach even the most basic arithmetic. Judith Sunley, Senior Advisor to the Director of the NSF, listed five challenges faced by those who seek to affect change. Among those challenges: No one wants change (except for a wet baby).

At the conclusion of the Summit, Ed Ahnert announced the recipients of ExxonMobil Innovation Grants. The \$3000 grants are to assist the recipients in planning partnerships or other innovations, which will then be supported by the institutions themselves or by other funding. The recipients of the first grants are: East Tennessee State University, Humboldt State University, Northeastern State University (Oklahoma), the University of Illinois at Chicago, and the University of Southern Colorado. ■

Mike Breen and Annette Emerson are Public Awareness Officers of the American Mathematical Society.

ASSISTANT PROFESSOR

The Department of Mathematics, Physics, and Computer Science at the University of the Sciences in Philadelphia is accepting applications for a full-time (non-tenure track) faculty position in Mathematics to begin August 12, 2002. Responsibilities include teaching Mathematics through Calculus II, with special emphasis on facilitating the learning of students with math anxiety. Candidates should have a minimum of a Master's Degree in Mathematics and demonstrated teaching effectiveness.

The department currently has sixteen faculty members, has active undergraduate minors in mathematics, physics, computer science, and statistics, and has recently started a computer science major with special emphasis on the biomedical and health sciences.

University of the Sciences in Philadelphia is a leading co-educational academic institution, providing undergraduate, professional and graduate education in the health professions and natural sciences.

Submit a resume, transcript, a statement regarding teaching interests and philosophy, and three reference letters to:

Dr. Stanley Zietz, Chair, Department of Mathematics, Physics, and Computer Science, University of the Sciences in Philadelphia, 600 S. 43rd St., Phila., PA 19104-4495. Email - mpesch@usip.edu

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The MET Summit: Some Personal Comments

By Ann Watkins

Along with many MAA members, Executive Director Tina Straley, Secretary Martha Siegel, and Past President Tom Banchoff, I attended the National Summit on the Mathematical Education of Teachers held near Washington, DC November 2 and 3.

Almost everyone at the Summit already was committed to working with teachers, and many were very experienced in doing so. The small-group sessions where the presenters had research results to report on how to teach mathematics more effectively to teachers or where the presenters had successful practices to share were very well received.

For example, Rob Gould of the Statistics Department at UCLA and Chris Franklin of the Statistics Department at the University of Georgia presented an excellent session on "Teaching Statistics to Future

High School Teachers." Both Rob and Chris have worked with teachers in the Advanced Placement Statistics program and have popular courses for preservice and inservice teachers on their own campuses. The audience was very interested in hearing how Chris has established a productive working relationship with the School of Education and how Rob designed his course with the help of experienced statistics teachers in Los Angeles. (One of the interesting things that has happened as a result of the AP Statistics program is that high school teachers have been seeking out statisticians who are known to communicate well with teachers, and asking them for special courses.) Chris and Rob also demonstrated some activities that work well with teachers and that they can use with their own classes.

I attended another well-received session given by Deborah Shifter of EDC. She

showed videotapes of elementary school students working on problems designed to help them understand concepts about the decomposition of geometric figures so they eventually would be able to understand the geometric proof that the area of a triangle is half that of the surrounding rectangle. We read transcripts of teachers working on the same idea and having difficulties similar to those of the children. For example, some of the teachers did not see that the rectangle contained two pairs of congruent triangles, apparently since one congruent triangle was a rotation of the other, not the easier-to-see reflection across a line. Another teacher needed help understanding that base and height could be the same as length and width. The lesson I came away with was, once again, that something that seems very obvious to us, like this proof, requires prerequisite knowledge that must be built up carefully. The videotapes and transcripts demonstrated how that can be done. This was very valuable research. ■

TENURE-TRACK MATHEMATICS

Embry-Riddle Aeronautical University is a private, multi-campus institution committed to educating the future leaders of the aviation and aerospace industry. The Department of Computing and Mathematics is seeking applicants to fill a tenure-track position at the Assistant or Associate Professor rank.

TENURE-TRACK MATHEMATICS

Candidates must have a Doctorate in mathematics and be capable of teaching a broad range of undergraduate and graduate courses that support engineering, computer science, and business as well as participate in a new program with a computational focus.

Appointments are available beginning August 2002.

Please submit applications to Embry-Riddle Aeronautical University, Human Resources Department, 600 S. Clyde-Morris Blvd., Daytona Beach, FL 32114. Fax: (386) 323-5060. Email: jacobaska@db.erau.edu

For more information on this position visit <http://www.erau.edu/jobs>

EOE M/F/D/V

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RAMAPO COLLEGE OF NEW JERSEY

Ramapo College of New Jersey is a four-year undergraduate college located in the beautiful foothills of the Ramapo Valley approximately 25 miles northwest of New York City. Established in 1969 as a state-supported, coeducational college of liberal arts, sciences and professional studies, this institution offers an array of undergraduate, graduate, and post baccalaureate programs focused on the four "pillars" of the Ramapo College mission - international, intercultural, interdisciplinary, and experiential education. The College is committed to global education. It is a Fulbright Center and houses the New Jersey Governor's School for International Studies. On-site childcare is available.

Position # 847

ASSISTANT PROFESSOR OF MATHEMATICS TENURE TRACK

Job Description: The School of Theoretical and Applied Science at Ramapo College of New Jersey is seeking an Assistant Professor of Mathematics to teach a wide range of undergraduate mathematics courses. Responsibilities include the teaching and development of general education mathematics courses.

Requirements: Ph.D. in Mathematics is required. A specialization in applied mathematics is a plus. Teaching experience preferred.

Faculty members are expected to maintain active participation in research and/or scholarship, college governance, and academic advisement.

Interested applicants should submit a letter of interest, vita and a three letters of recommendation to Mary Shiffman, Chair/Search Committee, c/o School of Theoretical and Applied Science or email: shiffman@ramapo.edu. Review of applications will begin immediately, and continue until the position is filled.

Since its beginning, Ramapo College has had an intercultural/international mission. Please tell us how your background, interest and experience can contribute to this mission, as well as to the specific position for which you are applying. Positions offer excellent state benefits. To request accommodation, call (201) 684-7734.

Website: <http://www.ramapo.edu>



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Contact Us at MAA Online

By Annie Selden

At the top left corner of almost every page of MAA Online are three buttons: *Home*, *Search*, and *Contact Us*. When you click on *Contact Us*, you find a number of people you might e-mail. If you had a question about mathematics or mathematics learning, which of these people would you ask? The Editor? Maybe. I know Fernando Gouvêa gets a lot of e-mail about broken links, as well as requests to publish the latest angle trisection. But you probably would not ask one of the associate editors for MAA programs, professional development, awards, or sections. And, unless you want to know about subscriptions, book orders, donations, or committees, that leaves me — the Associate Editor for Teaching and Learning — which seems to be the catch-all, grab bag category.

Until assuming this volunteer position, I had no idea what it might feel like to be a mathematical Ann Landers. While no one at MAA asked me to do so, I decided that, in the interests of good public relations, every sincere request for help should get answered, even if it's only to point people to "Ask Dr. Math," at the Math Forum [<http://mathforum.org>]. Alternatively, if a query poses a mathematical problem, I sometimes suggest asking the Math Nerds [<http://www.mathnerds.com/texan>], a site willing to provide "free, discovery-based, mathematical guidance via an international, volunteer network of mathematicians," one of whom is W. Ted Mahavier of Lamar University. Just recently, I found a site called "The Math Doctor is In!" run by Dan McQuillan of the University of Western Ontario, which I might recommend in the future [<http://homepages.msn.com/LibraryLawn/learnmath/>].

So what sort of queries do I get? Here's an eclectic sampling of the territory, typos and all.

Q: Help with math problem (%). This may sound crazy but I wanted to know the answer to a simple math question that me and Employer disagree on. My name

is Billy... and my question is: I'm an assembly supervisor at a local furniture plant and I receive a monthly salary bonus based on my labor hours used and the dollars produced. My average is \$132.49 manufactured for every labor hour used. If I wanted to beat my goal by 15% — What would be the amount to average and what is the proper formula to use to come to that figure? I'm saying $\$132.49 * 1.15\%$ — Is that correct? For $\$152.36$? They are saying to multiply $\$155.87 * .85$ to come back to my average of 132.49? and that to improve by 15% it would be $\$155.87$. Who is correct? Please answer this for me. Billy

A. Dear Billy. You and your employer are looking at the problem differently. The difficulty you are having is a very common one. It usually results from percent not having been well-taught by most teachers. The problem is that 15% is not meaningful by itself. It must always be 15% of something (called the base). If you want to beat your current dollar amount by 15%, you would multiply $\$132.49$ by 1.15 (not 1.15%) to get $\$152.36$. This would mean you had increased your current dollar amount by 15%. However, if you wanted to know what dollar amount you would need to have started with in order that a 15% decrease would get you back to $\$132.49$, that would be $\$155.87$ or 155.86 divided by $.85$.

It turns out that if you go up 15% of some amount (say \$100) and come back down 15% of the result (\$115), you don't get back where you started (instead you get \$97.75). That's why, for example in the stock market, they say that if your stock goes down 50%, it has to go up 100% in order to get back where you started. To see this, think of a stock that costs \$100. It falls 50% of its current value. It's then worth only \$50. In order to get back to the \$100 you started with, your stock price has to double in price from \$50 to \$100, that is, increase by 100%. The problem is the *base*. Percent is not an absolute term. It is always percent of *something*.

If you have a description of this bonus in writing, I would read the written word

very carefully. It could go either way, depending on the wording.

Q: Psst! Wanna help an English prof? Hi! I'm stumped, and maybe you can help — I'm a college English prof; I'm interested in how people learn, and in learning styles. I've had an ongoing discussion with my math colleagues about this. Math students, and foreign language students, tend to want reasons for everything, and to proceed logically in solving problems or in speaking. But I maintain that habit and intuition are just as important, certainly with languages, and at least one math colleague agrees in math. There is a method of teaching math that I read about in *Newsweek* several years ago, Japanese-developed, I think, which involves practice and repetition, and seems to seek to develop instinct and intuition to solve math problems. BUT I CAN'T REMEMBER THE NAME OF THE METHOD! Can you tell me what it is and where I can learn more about it (a book or a website?). Thanks! THANKS! Al

A: Dear Al. I can't help you with the name of the Japanese method you are thinking about. Here are a couple of suggestions.

1. You might try posting your question to "Ask Dr. Math" at the Math Forum...
2. You might also look at some of the results of the recent TIMSS (Third International Mathematics and Science Study). Information about the TIMSS, and in particular about teaching styles in Germany, Japan, and the U.S., is available at <http://nces.ed.gov/timss/>. If you are interested in learning styles more generally, I could fax or send you a recent article...

Q: New Physics Formula for Projectiles. I am a 8th grade student doing a science project on projectiles and parabolas. This experiment was done by launching a baseball with a pitching machine, and measuring the angle of launch and the distance traveled. To find the height that it traveled I used the formula $H = (V_y * t) + (.5 * A * t^2)$. With my research results, I discovered the formula $d/4 * \tan$ of angle launched = H. I was wondering if this formula had been discovered before, or if this is new. Please e-mail me back. Thanks. Paul.

A: Dear Paul. You need to define your variables. I was able to figure out that H = height of the projectile, V_y = initial velocity of the projectile, A = the acceleration due to gravity, but what is d ? I suggest you rewrite your message, being sure to define your variables, and post your query on the "Ask Dr. Math" portion of the Math Forum...

Q: Calculus II On-Line Course. My college freshman son is on the quarter system. He passed Calculus I just fine, but is needing to retake Calculus II and we are looking for college-credit on-line course he can take. Any suggestions? Thank you for your time! Mom-at-wit's-end :(

A: Dear Mom-at-wit's-end. Someone else asked me about an Online calculus course a while ago. Here's what I wrote that person: I have been surfing the Web, looking for information on on-line calculus courses that are taught at good universities (so your son could transfer the credit). I think I may have found one at Oregon State University called CalculusQuest... the URL is <http://iq.orst.edu/cq/info.html>. Good luck to your son.

Q: A question from one of my students. Hi—I found the MAA Online site while searching for an answer to a question one of my students asked me, and I thought I'd see if you had any ideas, as I can't think of too many other people to ask. A student in my statics course told me last week that he is a lightning calculator, and would like more information on the subject, as well as the opportunity to compete in lightning calculator contests (which I assume are something like spelling bees). Do you have any idea where I might look for information about this?

A: I have not heard of contests for lightning calculators. However, I have heard of mathematical competitions, which are usually aimed at in-depth problem solving. To get information on these, contact Titu Andreescu, Director American Mathematics Competitions, University of Nebraska... Titu may also have heard about contests for lightning calculators. Other than that I can only suggest you post your query to "Ask Dr. Math"...

Q: Nanometer. Hi, I'm trying to understand the very small world. If a micrometer is one-millionth of a meter and a nanometer is one-billionth of a meter, what is the name for the measurement one-trillionth of a meter. Can't seem to find this anywhere. Terometer? Sandra

A: Dear Sandra, I don't know the answer to this question, but I do know where you could probably get an answer. A good source of information is the Math Forum... Or, you might consult the National Institute of Standards and Technology, which has a page on SI units. The URL is: <http://physics.nist.gov/cuu/Units/index.htm>... I hope this helps.

Q: Help for a school project. hi Ms. Selden, my name is Katy... I am a sophomore at [a high school in Michigan]. My algebra 2 class is doing a project that looks at real life applications of specific types of mathematics. My topic is quadratic equations, discriminants and roots. I was wondering if you could help me out with whatever information you have or point me in the right direction research wise. I'd appreciate your ideas very much, and hope to hear from you soon. Thank you!!

A: Dear Katy. [I had fun with this one, searching the Web for interesting sites.] As you may know the graph of a quadratic function is a parabola. Parabolas are useful for many things, including reflectors for car headlights, telescopes, and satellite dishes. You might want to consult the following websites: <http://csmt.msstate.edu/lw/html/resources/reflect.html> and <http://www.exploratorium.edu/snacks/parabolas.html>

An article on parabolic concentrators for solar cooking can be found at: <http://solarcooking.org/ashok/solar5.htm>... There is a nice article on "Why satellite dishes are parabolic?" at <http://mathcentral.uregina.ca/RR/database/RR.09.95/weston1.html>... One can even predict future oil production using one or more parabolas. Information can be found at <http://www.exploratorium.edu/snacks/parabolas.html>, but it's pretty technical... There are also such things as parabolic skis. See a posting as to why they might be better at [\[www.nasatech.com/WWWboard/messages/196.html\]\(http://www.nasatech.com/WWWboard/messages/196.html\). I suspect this will get you started. Good luck.](http://</p>
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Q: Math help. Dear Ms. Selden, I know you are busy so I will be brief. I am an undergraduate student studying nutrition at NYU. My assignment is to work on a new type of diet. I came up with an unique diet, which I am having trouble applying. All foods contain varying percentages of water. They also contain calories. I need help devising a simple formula which translates the percentage of water in food along with its calories and then is assigned a point or other value system. The formula must somehow reflect BOTH the percentage of water and calories of the food before a point is assigned. This is not a linear equation. I am stuck. Certain foods may be high in water and high in calories, others low in water high in calories, etc. Should I divide one into the other, or multiply or what. Help. Once I have an equation, I hope to assign the food a point value. The idea being to lose weight or gain weight eat X number of points. This too I need help in. Also, I may want to factor in the fiber content as another variable. Whatever help you can offer is greatly appreciated. Thank you very much. Sincerely, Leslie

A: Dear Leslie, One place to ask your question is the "Ask Dr. Math"... [I always wondered what answer, if any, Leslie got.]

Q: Student looking for mathematical careers. Hi! I'm Alva... from the Philippines. Could you please help me? I'm an incoming senior in Philippine Science High School. With one week to go before enrollment, I still haven't interviewed someone about my chosen career. The interview is a requirement for our enrollment. Since I loved math from grade school up to now I think a math related job is best for me. Panicking on my situation, I tried the net and was led to a webpage telling to *contact you for anything*. [Italics added.] The career profiles were good but our school gave us eight questions which the career profiles didn't give any possible answers. The school required us to interview at least two people on the job and also at least two people training for the job. I saw the names at

the page on contacting members and I saw yours. I could use any help you would give me. I'm considering a job in the field of actuarial sciences or in the field of statistics or in research projects. I've listed the eight questions in this letter. Here are the questions: What do you like about your job? What do you dislike about it? How do you prepare for it? Does your training seem to adequate for it? How much do you earn? What is a typical day like? What do you see in the future for a job like yours? What special skills are required for your job?

Any help you could give me is welcome. Could you please give me the e-mail addresses of people who I could interview? Please, I need your help as soon as possible, our enrollment is on May 25. Please respond urgently. E-mail me at... Thank you for your time and your help. May god bless you always.

A: Dear Alva, The MAA Online "Contact Us" button is not meant to indicate we

will help on just "anything" and you seem to have put off your assignment for quite some time. However, I will personally help you. I am a Professor of Mathematics at a comprehensive state university with an engineering emphasis... [and went on to answer her questions].

Sometimes I get a separate follow-up "Thank you!" Mostly, I am amused and amazed by the variety of queries. By searching the Web for leads, I learn more myself.

There have also been more mundane queries asking me for information about forming MAA student chapters, to recommend books about mathematical careers [yes, indeed MAA has some, and here's how to order them], about totally Online mathematics degrees [couldn't find any], or about mathematics placement tests [sorry, MAA doesn't do those any more]. In addition, there have been some rather grave requests — for ex-

ample from a director of undergraduate studies wanting to know where to get a braille partial differential equations book for a student [couldn't find any]. And from a boy overseas with Asperger's Syndrome, which he described as "an extreme form of social disability that renders normal one-to-one interaction between peers impossible," wanting some calculus materials. I asked a book company to help. ■

Annie Selden is a member of the FOCUS Editorial Board and is Associate Editor of *MAA Online*, where she edits the "Teaching and Learning" page and also writes, with John Selden, the "Research Sampler" column. Her efforts to answer email queries are one more reason for her being awarded the 12th Louise Hay Award for Contributions to Mathematics Education (see the note in our "Short Takes" section).

Research theme: Automorphic Forms and Applications
Education theme: Knowledge of Mathematics for Teaching

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Organizers:

Peter Samak, Princeton University, and Freydoon Shahidi, Purdue University.

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Other Organizers: High School Teachers Program: Gail Burnil, Michigan State University; Carol Hattan, Skyview High School. **Mathematics Education Research Program:** Joan Ferrini-Mundy, Michigan State University; Tim Kelly, Hamilton College. **Undergraduate Students Program:** Roger Howe, Yale University; William Barker, Bowdoin College. **Undergraduate Faculty Program:** Daniel Goroff, Harvard University.

Applications and information: www.ias.edu/parkcity

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PCMI is a program of the Institute for Advanced Study, Princeton, New Jersey, and receives major funding from the National Science Foundation.

Financial support is available.

WESTERN CONNECTICUT STATE UNIVERSITY

Department of Mathematics and Computer Science Tenure Track - Fall 2002 Faculty

WCSU is seeking a tenure track candidate for an Assistant Professor in mathematics beginning in August 2002. The position includes support for and leadership in the University's general education requirement, which includes courses through Calculus II, and assistance to the department with offerings in the candidate's areas of interest. Duties include teaching, departmental service, and appropriate creative activity. Preference will be given to candidates with general education teaching experience, evidence of excellence in teaching, and interests that complement those of the current faculty.

Qualifications: A doctoral degree in the mathematical sciences is required for the position.

Application Process: Interested applicants should send a resume, three letters of reference, unofficial transcripts, statement of teaching philosophy, and evidence of teaching excellence, to: Dr. Ron Kutz, Search Committee Chair, Department of Mathematics and Computer Science, WCSU, 181 White Street, Danbury, CT 06810. kutzr@wcsu.edu

Review of applications will begin on December 1, 2001 and will continue until the position has been filled. All application materials must be received by January 15, 2002, for the application to receive consideration in the first round of screening. Preliminary interviews will be held at the Joint Mathematics Meetings in San Diego for those candidates who are attending. Please indicate your expected attendance in a separate e-mail to the search chair to ensure that contact is made. No electronic submissions will be accepted, except for letters of reference.

WCSU is an AAEO Educator/Employer.

Professional Development in Mathematics: The Next Few Years

By Thomas W. Rishel

Once again, predictions are being made that there will be a phenomenal growth in the number of entry-level mathematicians into academia in the next ten years. Of course, we have heard such predictions before, notably in the mid-eighties, right before a dramatic downturn in the fortunes of American mathematics departments. This time, however, the projections seem to be more accurate.

What is the evidence? Well, for one, the percentages of retirees and deaths among college mathematics faculty have increased rather steadily from 1.4% in 1986 to 3% in 2000. College and university buyout plans continue unabated. Some institutions are trading their tenure lines for part-time positions, but these only increase the absolute numbers of positions. Further, the numbers of graduate students rose, from 8,100 in each of 1998 and 1999, to 8,900 in 2000. This number is expected to increase again for this year. Finally, the NSF's VIGRE program has created openings at universities for postdoctoral fellows.

Meanwhile, there is strong evidence that schools are looking for more mathematicians. The numbers of unfilled tenure-track doctoral positions in all colleges, bachelor's granting and above, went from about 140 in 1995 to just over 400 in 2000. Advertisements in AMS/MAA publications are up 22% over last year at this time. As of last November, there were 544 advertisements on EIMS online. That's up over 25% from last year. The fact that the number of tables taken by colleges at the Employment Service at this year's Joint Mathematics Meeting is the same as last year seems to imply that schools have multiple openings, not that the market has leveled off.

Some cite as contrary evidence the decline in majors: from about 25,000 in mathematics in 1970 to 12,800 twenty-seven years later. However, when we look at the total enrollment in undergraduate mathematics, the numbers are exceptionally stable over the last six years — from 2,085,000 in 1996 to 2,087,000 in 2000.

On a related note, the call for more quantitative literacy courses, more remedial and developmental mathematics, more teaching "across the curriculum" will not decrease the need for mathematicians; it will simply force a broader range of skills upon the new PhD.

The Move toward More Emphasis on Teaching

Before we discuss what kinds of professional development might be needed and how it can be obtained, we should spend a little time on the evidence for a need for college teaching skill among PhD mathematicians.

I mentioned quantitative literacy. In fact, there is a need for teaching ability of a new and different kind for increased numbers of nontraditional courses, whether they be "freshman seminars," math for poets, or writing across the curriculum programs (Joseph Harris, the recently chosen director of writing programs at Duke University, says, "mathematics is the toughest nut to crack," but he's going to try.)

Another indicator of the importance of teaching is an increased emphasis on service courses. While mathematics has always been a "service discipline," an increase in econometrics and business majors, to name just two, in our mathematics courses will challenge us to reach out to other disciplines for our methods, our examples, and our classroom materials. Anecdotally, I know that I myself saw an immediate increase in physics and engineering students in my topology class a few years ago right after it was said that homotopy theory might have some applications in those fields.

Various other forces help point to a need for better teaching. Increased tuition costs lead to demands for accountability on the part of parents on one hand, and legislators on the other. With its VIGRE program; the NSF is leading us, or maybe it itself being moved to lead us, in the direction of more funding for teaching.

The employers of mathematicians, even at the PhD level, are more often companies and governmental agencies than they used to be. These employers are asking for more of a "liberal arts training" in mathematics; i.e., more writing and speaking skills, more cooperative work — in short, more of the skills that are developed by enhanced emphasis on nontraditional teaching skills in graduate programs.

Those schools that employ newly minted PhDs are still likely to be comprehensive colleges and baccalaureate institutions; such schools put great emphasis on "teaching ability."

Further, foundations and associations are getting into the mix. The Carnegie Foundation, for instance, has spent the last ten years working to recreate academia through the Ernest Boyer model of "the scholarship of teaching." Meanwhile, the Pew Charitable Trusts and the NSF have been funding "Professors for the Future" programs.

In fact, I have seen no evidence that there is a decreased emphasis on teaching in academe. So let me stop belaboring the obvious. There is a serious need for professional development among the new cohort of mathematicians.

Faculty Development

Ideally, audiences for professional development programs should include all faculty. In practice, graduate students, junior faculty, postdoctoral fellows and adjunct and part-time faculty comprise the majority of the audience for these initiatives.

It is easiest to attract graduate students to developmental programs. TA training is supposed to be a no-brainer, yet so many schools ignore it or do it badly. Graduate students, after all, are first-timers in the profession; if we can start them off right, we can all reap forty years of pure benefit. Meanwhile, the students are begging for help with their teaching. They

don't want to start with pedagogical theory at first, that will come after they have some experience. What they want to know at the start of their careers is where to pick up their textbooks, how to find their teaching assignments on the message board, and where the classrooms are. In other words, first they want the "nuts 'n bolts" of teaching. Then they can go onto more serious issues.

Programs for graduate students usually include a component of "microteaching," which is a short mini-lecture or problem session conducted at the board by the new graduate students. Other activities usually include a mock paper grading session, discussion of various strategies for problem solving in class, or a seminar on cooperative learning techniques. These and other techniques can be extremely helpful if they are conducted in an atmosphere of cooperation, that is, if the students are made to feel, "I can do this, and if something goes wrong, I have someone I can ask about it." In such a case, the first major hurdle of teaching will have been cleared. It is amazing how learning to relax in the first few weeks can make all the difference in a career.

Written Sources: The Short List

Until the last year or two, there were essentially no books that concentrated on the pedagogy of college mathematics, Steven Krantz' *How to Teach Mathematics* being a notable exception. That has now changed.

Let's do the "infomercial" first. The best book I know of for basic TA training is (of course) my own: *Teaching First: A Guide for New Mathematicians*. (Of course, it's easy to claim to be "best" when you're also the only one.) But before you decide that the point of this article is to sell you the book, let me tell you a poorly-kept secret: an early, somewhat rough, version, when it was named *A Handbook for Mathematics Teaching Assistants*, is online at <http://www.maa.org/pfdev/tashandbook.html>. And there it is absolutely free!

A few people at other schools have put together their own locally distributed manuals. A nice one is *Teaching Math-*

ematics: A Handbook for Graduate Teaching Assistants, by Eileen Shugart at the Virginia Tech Department of Mathematics. Her book has a similar flavor to mine. Some of the topics are what is day one like, how do you go over homework, what if you get completely stuck, what should you do in office hours. If those topics interest you, write Eileen and get a copy.

A more advanced approach to teaching is contained in Solomon Friedberg's book, *Teaching Mathematics in Colleges and Universities: Case Studies for Today's Classroom*. Sol's idea is to bring the case study methodology, a staple in law and business schools, into the teaching arena. His examples are quite sophisticated and nuanced, and even faculty who have taught for a while can profit from discussing them.

More on Graduate Development

Another opportunity for graduate student development is the aforementioned Professors for the Future (PFF) program. There actually have been a few such programs with various funding sources; I believe that the original one was called PFP (Preparing Future Professors), begun at Syracuse University about a dozen years ago. The fundamental idea of all these programs is to give graduate students a feel for what it will be like to be faculty members at small colleges, where "small" seems to be defined differently by each program. The union of all such definitions seems to exclude only research-one institutions, however.

There seem to be two basic models of PFF programs: what I will call "the high-priced one," and "the other one." The high-priced model usually includes some component of teaching, maybe at one of the local community colleges. The upside of such a model is that it gives the graduate student first-hand experience in teaching an audience of students significantly different from those usually seen at a graduate institution. There is a tradeoff, of course – not all faculty advisors are happy to see their graduate students spending a large amount of graduate school time involved in what becomes a very intense teaching experience.

In "the other model," graduate students gain some experience by giving "job interview" style of talks to "math club" audiences of undergraduates and their faculty advisors at regional colleges, or at Sectional meetings of the MAA. Other activities include mock job interviews, discussions with faculty at other schools about their life at the college, or workshops on teaching methodologies in pre-calculus and calculus.

There is no doubt that these Professors for the Future programs have had some significant impact at institutions that have initiated them. Students gain a much greater comprehension of the pleasures and pitfalls of the life of a faculty member at, for instance, a four-year teaching-intensive college, before they make the decision to commit themselves to such a career because they are "fed up with their thesis."

Apropos that last comment, I recall the first year I had such a program. One afternoon, driving home the graduate student coordinator of our program, I idly asked her, "What did you learn from this experience, Rachel?" She immediately answered, "When I began, I thought I wanted to teach at a school like that. Now I see that I want to do research." At that point, I knew that the program had serious value; Rachel had made a professional judgment based on real information.

Project NExT: The Best of the Best

Another program, this time for junior faculty, is the MAA's Project NExT. This is a nine-year-old initiative funded by the ExxonMobil Foundation. The goals of the program are similar to those of PFF, but this time the stakes are higher. Participants are no longer students, and the tenure-clock is running. NExTers are brought to the summer meeting of the MAA where they take two days of seminars and discussions of teaching-related issues: how can I use technology in my classroom, what's the best linear algebra book, does anyone have any resources for a non-traditional calculus course. Other topics that are usually discussed are how do I get tenure, what's inside a teaching portfolio, how can I keep a research program going at my small college. The fac-

ulty then stay for the MAA summer meeting, after which they go to their home institutions and get onto a list-serve for advice and encouragement for the next year – which usually continues for the rest of their careers, actually. This program accepts about seventy recent PhDs each year, and I strongly recommend that you suggest it to your new hires. Of course, the MAA website has all the information you need.

Junior Faculty and Others

Junior faculty, part-timers and visitors are in some ways similar to graduate students, in other ways not. As with graduate students, they also need to know which staff member collects the course grades and where the syllabus file is located. I can't tell you how much tension between new faculty and staff I have alleviated over the years by explaining the copy machine policy. Do not hesitate to give all these people a one-day training; the feeling that "they won't like being treated like the grad students" is, to my mind, foolishness. I have never seen a new hire who didn't appreciate a "short orientation." An example of a way in which they are not like graduate students: they will really appreciate a discussion of how to fill out the benefit forms.

It is important to recall, too, that the needs of part-time faculty are quite different from those of essentially all the other categories I have mentioned. Some will be with the department for only one semester or one year; others will be hired *ad infinitum*. In each case, the training needs vary. One example: If you give the "benefits" talk to a mixed group of full-time visitors and one-course part-timers, you may stir up resentments from those who don't have the benefit package. This does not call for your not giving this talk, only for sensitivity as to the way you do it.

The Difficult Cases

Who's left? Ahh, yes. The tenured faculty. Well, there are difficult cases...

The goals for tenured faculty need to be built around acquiring critical skills for departments, as well as for keeping one-

self invigorated. There need to be more incentives than post-tenure reviews for tenured faculty to improve their teaching.

Many older faculty see professional development programs as an indicator that they are perceived as dead wood; if such programs are sold as such, they do a disservice to departments. Each department has holes that must be covered, whether they come from the retirement of the resident specialist in statistics, a marked increase in the number of math education majors, or a shift in college policy towards more quantitative literacy courses. All faculty, including tenured faculty, should be encouraged to take advantage of enhancement activities.

An example of one such program is the MAA's Professional Enhancement Program (PREP), which offers a variety of workshops designed to increase faculty awareness and ability in a broad range of topics of interest to faculty. This program, funded by NSF through DUE, is going into its second year. See the article in this issue and check out MAA Online, at <http://www.maa.org/pfdev/prep/prep.html>. Next year's PREP workshops will cover a broad range of topics, from regression analysis to being a departmental chair, from assessment of student learning to knot theory, from finite mathematics to authoring online mathematical materials.

One especially notable workshop will be on preparing mathematicians to educate future teachers. This workshop, to be held over the next two summers, is meant to address the serious lack of mathematics educators at American colleges — a lack that is reflected in the job listings every month.

Other Professional Organizations

One organization with a more diverse representation that is worth noting is called POD, the Professional and Organizational Development group, made up of professional development officers at colleges and universities around the United States. The organization has a list serve that can be found on the web at <http://lamar.colostate.edu/~ckfgill/>.

A lot of what POD discusses is not directly related to mathematics itself. However, that brings me to an editorial that needs to be made, about this and similar groups. Over and over again, people post to the POD listserv that they really need and cannot find pedagogical materials relevant to mathematics. The mathematics community, meanwhile, seems to have the approach that "We are so unique that there are no cognates to our discipline in other areas of academia." Yet, I have seen professional development activities at colleges that are of direct importance to mathematicians and mathematics educators. One example is workshop on cheating and plagiarism, a topic that is directly relevant to all aspects of the professorate. Another is a workshop on tenure issues that brought together not-yet-tenured faculty with colleagues who had just received the good news, along with the provost of the college. The end result, I am sure, was a better understanding of the entire process on everyone's part. I would wager that the portfolios sent in for evaluation the next year were substantially easier for chairs and administrators to read. Another panel and workshop discussed grade inflation and its effects on all aspects of college. Finally, there was a series on cognitive studies and the use of such studies in the classroom.

There are many important discussions of professional development issues that are going on in all areas of academia; we mathematicians ignore these discussions at our own peril. We need to involve ourselves in these debates before we find ourselves being dictated to, to everyone's detriment.

Professional development in mathematics departments is necessary. Now is an especially good time to do it, and now is also a good time to decide on the criteria by which it is to be accomplished. We need to enter this arena, for our own good, and for the future of mathematics.

Tom Rishel is Associate Executive Director of the MAA. This article is based on a talk given at the National Academy of Sciences Board of Mathematical Sciences annual department chair's meeting in Washington, D.C.

Professional Enhancement Workshops

Details of next year's Professional Enhancement Program (PREP), organized by the MAA and funded through an NSF grant, are changing by the day. Even so, the information we have so far is exciting enough to bear telling.

The second year of the PREP program has seven workshops whose details have been determined. These events are in various areas of the country, plus two more in cyberspace.

The five workshops in "real space" begin with a two-day event to be held right after the Joint Meetings in San Diego on January 9–10. This workshop, led by Bill Haver of Virginia Commonwealth University, is on the topic of Assessment at the Department Level. After the two-day workshop in San Diego, the participants will meet twice more, once next May at VCU, and again directly after the Baltimore Joint Meetings in 2003. For more details on this and all the other workshops, consult the MAA Online website at <http://www.maa.org/pfdev/prep/prep.html>.

Ed Burger and Michael Starbird will be holding a workshop at the University of Texas, Austin, on May 28–31, 2002. The title is Presenting Mathematical Masterpieces and Powerful Techniques of Effective Thinking to Non-Science Students.

In the month of June PREP will hold three more workshops. One led by Richard Scheaffer of the University of Florida, is on the topic of Regression Analysis. This week-long event is slated for Oberlin College in Ohio from June 2–7. A two-week workshop, June 9–20, in Potsdam, NY, will be on Preparing Mathematicians

to Teach Mathematics Education, led by Ed Dubinsky; this workshop will then continue for two more weeks in the summer of 2003. The third of the June workshops will be held at Delaware State University, where Mazen Shahin will lead Explorations in Finite Mathematics. Dates for this workshop are June 23–28.

For the first time this year, the PREP program will include two distance learning workshops. One of these is being planned by Lang Moore and Frank Wattenberg, and will be on the topic of Authoring Interactive Online Materials. Another Online workshop, on Quantitative Literacy, will be headed by Dennis DeTurck of the University of Pennsylvania.

Two other PREP workshops are still in the planning stage. One of these is on Knot Theory, to be led by Colin Adams of Williams College at a site to be announced. A second is a Department Chairs' Workshop, which will be arranged by Tina Straley and Jon W. Scott.

For more information on upcoming PREP workshops, for application forms, and especially for further updates on the program, go to www.maa.org/pfdev/prep/prep.html.

Most workshops are open to twenty participants, and lodging and food costs are defrayed by the NSF grant. There is some travel funding available for participants from resource-poor institutions.

Guidelines for hosting a PREP workshop for 2003 are also available at the website, as is information on previous PREP workshops. This program is funded by NSF grant DUE-0089005. ■

Carter & Mendez Elected to the MAA Board of Governors

The MAA Board of Governors has two new at-large governors. Claudia Carter, who teaches at the Mississippi School for Mathematics and Science, in Columbus, Mississippi, has been elected the MAA's Governor-at-Large for High School Teachers and Celestino ("Tino") G. Mendez, from Metropolitan St. College of Denver, has been elected the MAA's Governor-at-Large Representing Minorities. Their terms begin at the close of the January 2002 meetings in San Diego.

Claudia Carter has worked at MSMS for 13 years and taught high school mathematics for nearly 30 years. She has coauthored eight textbooks and workbooks, conducted more than 100 workshops and/or staff development sessions at the local, regional, and national levels, developed curriculum materials for Hewlett Packard, and served as President of the MS Council of Teachers of Mathematics (1991–92) and President of Mu Alpha Theta (1999–2001), among her many duties.



Claudia Carter



Celestino Mendez

Celestino Mendez has been an MAA member for more than three decades, and during this time he has served the MAA in numerous capacities, including work as Rocky Mountain Section Governor (1993–1996), SUMMA Regional Coordinator (1996–present), SUMMA Carnegie Corp. of NY Grantee and Program Director (1995), and member of the Science Policy Committee (2000–present), Development Committee (1990–2001), and Coordinating Council on Awards (1993–96).

Have You Moved?

The MAA makes it easy to change your address. Please inform the MAA Service Center about your change of address by using the electronic combined membership list at MAA Online (www.maa.org) or call (800) 331-1622, fax (301) 206-9789, email: maaservice@maa.org, or mail to MAA, PO Box 90973, Washington, DC 20090.

Short Takes

NSF Invests in Science Education

The National Science Foundation has announced a \$100-million campaign to improve science teaching across the country. The program will be implemented through grants to coalitions of universities, school districts and nonprofit organizations working on various areas of science education. Seven grants have been awarded, to coalitions based at the University of Maryland College Park, Texas A&M University, WestEd (a federal education laboratory in San Francisco), the University of Wisconsin-Madison, the University of Tennessee, Knoxville, Montana State University-Bozeman, and the San Francisco Exploratorium.

Vietoris at 110

Leopold Vietoris, probably the oldest living mathematician, recently celebrated his 110th birthday. According to the press release from the University of Innsbruck (see <http://www2.uibk.ac.at/service/c115/presse/2001/40-01.html>), Vietoris was born on June 4, 1891. His most recent paper was published in 1995, when he was 104.

RAND Mathematics Study to be Released Soon

As part of its "Achievement for All" project, RAND will soon release a draft of the report of the RAND Mathematics Study Panel. The report is likely to recommend long-term programmatic research and development in three key areas: algebra, broadly defined, and its uses; mathematical practices central to teaching and learning, and using mathematics effectively; and teachers' knowledge for teaching, and ways such knowledge can be developed and used in practice.

A list of panel participants (with brief biographies) can be found at <http://www.rand.org/multi/achievementforall/math/mathpanel.html>. RAND's "Achievement for All" project hopes to bring together "researchers, teachers, developers, and policy-makers to create debate and apply research findings and the wisdom

of practitioners to solving education problems." The project focuses on reading and mathematics, which it describes as "national priorities."

Annie Selden to Receive Hay Award

Annie Selden, a member of the FOCUS editorial board and an associate editor of MAA Online, will receive the 12th Louise Hay Award for Contributions to Mathematics Education at the Joint Mathematics Meetings in San Diego. The award cites her "major contributions to mathematics education," including her efforts to make mathematics education research better known and respected within the mathematics community. These efforts include her role as Coordinator of the SIGMAA on Research on Undergraduate Mathematics Education and the "Research Sampler," an occasional column that she and John Selden write for MAA Online.

Intel CEO Worries About American Education

According to *USA Today*, Intel CEO Craig Barrett recently expressed concerns about mathematics, science, and technology education in the United States. After being honored by the National Alliance of Business for his work on this issue, Barrett said that his company has a constant need for more "high-tech trained people." He fears that much of Intel's R&D work will move out of the US because of the lack of properly trained human resources here. He expressed impatience with the public school system, pointing out that "We fire football coaches after the first year of a losing record, but we continue to let the public school system take children and basically degrade them on a relative basis to their international counterparts." The *USA Today* article can be read Online at <http://www.usatoday.com/news/comment/2001-11-08-ncguest1.htm>.

House Approves Appropriations Bill

The House of Representatives recently confirmed Congressional support for

federal investment in Research and Development by approving the fiscal year 2002 VA-HUD Appropriations bill by a vote of 401-18. The bill includes increases for several agencies that fund research in science and mathematics. The National Science Foundation will be funded at its highest level ever, \$4.8 billion, an 8.2 percent increase over last year's budget that includes money for several new education initiatives. The legislation also increased funding for NASA and for the Environmental Protection Agency.

More Mathematics on the Stage and Screen

Plays dealing with mathematics and science seem to continue to be in fashion. After the popular and critical success of *Copenhagen* and *Proof*, several other productions have explored similar themes. November saw the opening of *QED*, a play about physicist Richard Feynman starring Alan Alda. A comedy called *Schrodinger's Girlfriend: A Play About Sub-Atomic Physics for People Who Can't Balance Their Checkbooks* had its debut in San Francisco in November, and *Star Messengers*, a musical about Galileo and Kepler, opened in New York in December. Finally, the movie *A Beautiful Mind*, inspired by Sylvia Nasar's biography of John Nash, directed by Ron Howard and starring Russell Crowe, starts its national run this January.

Ten Billion Zeros of Zeta

Sebastian Wedeniwski of IBM Germany announced recently that he and a large team of collaborators have computed the first 10,118,665,300 non-trivial zeros of the Riemann zeta function. This computation confirms and extends calculations made previously by others, and verifies that all of these zeros are complex numbers of the form $s + it$ with $s = 1/2$. The computation also confirmed that all of these zeros are simple. Details, including lots of information about the distribution of the zeros, can be found at <http://www.hipilib.de/zeta/index.html>. ■

In Memoriam

Betty Blades Niven
1913-2001

Betty Niven, widow of former MAA President Ivan Niven and Eugene city planning advocate, died of a stroke and congestive heart failure on October 20. Her son, Scott, and his partner, Gaylee were with her. Only last month they had all visited the Oregon Coast together, a place that Betty and Ivan had always loved.

Last year the city of Eugene and St. Vincent de Paul, honored her for her years and years of devotion to low income housing by naming a street, Betty Niven Lane, after her. The beautifully designed complex for low-income families was a dream of Betty's for many, many years. After her tireless work in Eugene, she was the chairwoman of the Oregon State Housing Committee, and she outlasted four Oregon State governors.

Ivan Niven was Professor of Mathematics at the University of Oregon and served as President of the Association in 1983-1984. He died in May of 1999.

Memories and condolences may be sent to Scott Niven, 6817 Bentley Circle N.E., Bremerton, WA 98311.

Ruth D. O'Dell
1929-2001

Ruth Dembo O'Dell, former Governor of the New Jersey Section of the MAA, died on September 6. She had retired in March as an Associate Professor at the County College of Morris in Randolph, NJ, after 25 years of service. O'Dell was born in Riga, Latvia and immigrated to New York City at the age of 9. She was educated at Antioch College, Brown University, and Western Reserve University. In addition to her work in the New Jersey Section of the Association, she was involved in many aspects of the mathematics community, both locally and nationally. When she ran for Governor, she argued that "The 1980's brought an awareness of the need for change in education. Mathematics, and the teaching of mathematics, are powerful agents for change. The 1990's must bring action: we must organize ourselves, and make our presence felt in the political arena and in society at large." She practiced what she preached, getting involved in strengthening and unifying the New Jersey mathematics community and working to reform education at all levels.

Letters to the Editor

Context Please

I wished the November article by Johnston and McAllister, "An Experiment That Worked," had spent a line or two saying something about Centre College. Of course I can look it up, but it would have lent some, I think needed, perspective to the reader.

Dave Cohen
University of California, Los Angeles

Alex McAllister replies:

Centre College is a nationally-ranked liberal arts college in central Kentucky. We have a student body of more than 1,000 students. The college hosted the Vice-Presidential debate in October 2000. There are five full-time faculty in our mathematics program; an average of nine math majors graduate each year (although last year we picked up 14 majors from a class of 250). In the fall term we typically teach seven sections of calculus I and II; three sections consist of the integrated precalculus-calculus sequence.

Happy Abstract Algebra Classes

Of course the students in John Fraleigh's abstract algebra classes were happy and got grades similar to those they had gotten in calculus courses. He permitted, even encouraged them to continue to do what they had done throughout their mathematical careers: memorize without thinking.


Gerald Leibowitz
University of Connecticut

Letters commenting on material published in FOCUS (or responding to other letters) are always welcome. Send them by email to fgouvea@colby.edu or by snail mail to Fernando Gouvea, Department of Mathematics, Colby College, Waterville, ME 04901. Letters will be edited for publication

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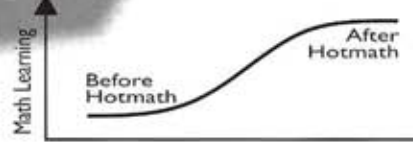


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