

Sinclair Mathnet

October 2000

Volume 7, Issue 1

FROM THE CHAIR



One nice thing about being a part-time faculty member is that you can focus your attention on your classes and our students and helping them learn mathematics. You don't have to worry much about Mission Models and Continuous Improvement Targets and Key Performance

Indicators and the Six Core Indicators of Success and the Strategic Plan and Division Initiatives and ..., well, the list goes on. But full-time faculty are not so lucky. And, since this is the quarter that we will be preparing for our biennial department review, we will spend some time thinking and talking about these things, and I don't think you part-timers should escape totally unscathed. So I would like to give you a little information about a few of these issues as they relate to the Mathematics Department. Now of course you could just turn the page at this point, remain unscathed, and tell me later what a nice article I wrote. But that wouldn't be right, now, would it? So I hope you will read on.

I would like to focus on just one item, Continuous Improvement Targets (CITs). Each year we are asked to establish five of these. Each is to be related to an LAS Division Initiative and they are approved during our budget process. We also use the CITs in our Department Mission Model, a document designed to relate everything we do as a department to the college's six Core Indicators of Success and to show how the things we do help us accomplish our CITs. The Mathematics Department's current CITs were written and prioritized last winter. Here they are with a comment about each:

1. Permanently establish recently developed retention intervention strategy - Math Retention Specialist

Having developed the activities of the Math Retention Specialist as a pilot project and temporary assignment over the last year and a half, we have now established this as an ongoing position (ongoing subject to our

ability to demonstrate its continued efficacy). Adolph Harris, who served in the position and helped to develop the specific activities performed by the Retention Specialist, is now mentoring Marie Stroh to take over the duties. Please support this important activity by cooperating with Marie as she requests your assistance throughout the quarter.

2. Permanently establish recently developed retention intervention strategy - Math Help Room Staffing

Thanks to the help of full-time faculty, Math Lab staff, Tutorial Services and some reassigned hours provided by the college (Thank you, Dr. Jacobs, Dr. Wells and Dr. Sifferlin for your support. Next year we hope to be thanking you too for supporting us, Dr Johnson!), we have been able to staff the Math Help Room forty-six hours per week with experts who can really give students serious help.

3. Permanently establish recently developed retention intervention strategy - Scale up of the Math 101 Learning Challenge Grant Project

The Math 101 Learning Challenge Project, under the able leadership of Sue Myers, is currently in the beta test stage. Three Math 101 pilot sections are being taught this quarter in the CIL by Barb Carruth, Janel Gauby and Tom Wilson to test new strategies. If successful, we will be trying to scale up this teaching approach to include more sections.

4. Improve currency of technology in the Math Lab, Computer Equipped Classroom, Math Department Office and Statistics Lab/Classroom

New and upgraded software has already been introduced into the Math Lab and Computer Equipped Classroom. Hardware has also been upgraded to the point where Len Ruth no longer complains about having to drop ancient computers on the ground as a means of repairing frozen

(Continued on Page 2.)



Faculty Feature

The Mathematics Department has a new full-time faculty member. Marie Stroh comes to us from Miami University at Middletown. In addition to her teaching duties, Marie will be our new Math Retention Specialist, a job that Adolph Harris previously held.



While at Middletown, her official job title was "Math Specialist." Besides teaching developmental math classes there, she was also responsible for hiring tutors, and training and supervising them in the campus help room.

Marie has had some other unique teaching experiences including teaching for Project Discovery, a program for elementary and middle school teachers, at Wright State University in the Summer of 1998. Of her experience, she says "What an eye-opener it was to discover how little math our elementary and middle school teachers know, or even care to know." Marie also co-taught a course for Dayton Public School teachers in the summer of 1999, and taught for Dayton Christian at the Xenia High School for one year.

When asked what she is most looking forward to at Sinclair, Marie mentions the possibility of teaching calculus, but adds "I just love to teach, and like to be with students. It is so rewarding when students walk out of class and say they're not afraid of math anymore."

Marie is a Dayton native, having lived in Kettering and Beavercreek during her youth. She earned both of her degrees, a B.S. in Mathematics Secondary Education and an M.S. in pure mathematics, from Wright State University.

Marie's husband Dick is Director of Maintenance for Legacy Ministries International, the parent corporation for Dayton Christian Schools. They have five children: Jacob is 20, Josiah is 19, Nathanael is 17, Christine is 15, and Andy is 12. Marie says that her husband and children are her best friends. When asked about her

hobbies, Marie mentions hiking, horseback riding, and dancing, "And I'm an avid reader."

Please introduce yourself to Marie and welcome her to the department!

Susan Harris ■

(Continued from Page 1.)

hard drives. The Office will soon be getting a computer for our student worker to use, and room 10327 is now fully equipped with work tables and computers to enable the "hands-on" teaching of statistics. Also, networking is on the way. And between tech math and statistics, we will be offering eleven sections of mathematics courses with lab components in rooms 10327 and 11441 during winter quarter. Thanks to Barb Carruth, Bob Chaney, Kay Cornelius and Janel Gauby for the development of these "hands-on" courses.

- 5. Improve student enrichment opportunities through such activities as increased usage of Computer Equipped Classroom, utilization of Math Help Room for student activities, continued participation in AMATYC student mathematics competition, and "Problem of the Week" competition

Use of the Math Help Room continues to increase quarterly, and we will again offer students the opportunity to participate in the AMATYC competition and Susan Harris' "Problem of the Week" competition. I hope you will be supportive by encouraging your students to take advantage of these opportunities and to participate in the newly formed Math Club as well. I also ask you to help us increase usage of the Computer Equipped Classroom. There are many topics that lend themselves well to being taught with the help of computers, especially with the new and upgraded software that we have. The equipment is easy to use and Barb Carruth or Sy or Michelle in the lab will be glad to help you.

As you can see we have placed great emphasis on retention, i.e., seeking innovative ways to help students who are having difficulty achieving success. At the same time we are trying not to forget those students who have a keen interest and/or special ability in mathematics.

Now that wasn't so bad was it? Why not pick the CIT of your choice and really get behind it and help us make a major success of it this year!

Al Giambrone ■



Maze Craze

The editors of *Mathnet* recently visited Tom's Maze, an 8-acre cornfield maze in Germantown. Including three miles of paths, the maze offered a challenge of finding twelve "map pieces" in order to discover the way out. An observation bridge is located in the middle of the maze, and a victory bridge is the exit and final goal. One greater level of difficulty was also accepted by our group – to complete the maze at night using moonlight and flashlights. Needless to say, the maze lived up to its expectation, offering surprises at every turn. The maze adventure was finally completed...three exhausting hours later! Souvenir T-shirts and buttons were purchased at the maze's exit to offer evidence of the survival and successful completion of the maze.



A MAiZE cornfield maze

franchise of Maze Quest, also a national company, east of Columbus at Lynd's Fruit Farm. The theme this year of the latter maze is *Escape from Egypt*, where explorers discover and learn about ancient Egypt.

Mazes typically cost \$5 or \$6, with \$1 off coupons being found on some maze web sites. You can learn about all of the above mazes by visiting:

www.tomsmaze.com,
www.cornmaze.com/oh,
 or www.cornfieldmaze.com.

There are also a number of other smaller mazes in the area. For beginners, there is a 3-acre maze for \$3 a person at Young's Dairy in Yellow Springs. You can complete the maze in about twenty to thirty minutes, and then treat yourself to a reward of ice cream.

If you wish to join us on any upcoming maze excursions, just see Lyn Keeler or David Stott.

Primed by this maze experience, we hope to visit one or two additional corn mazes in the area by the end of October, which is when most of them will be closing for the season. There are franchises of the MAiZE, a national company, in Piqua and Xenia, and there is a

Reminders

- Please be sure you are working from the current syllabus. Some recent syllabus revisions include: 101 - May, 2000; 105 - May, 2000; 108 - June, 2000; 116 - March, 2000; 117 - May, 2000; 131 - May, 2000. Also expect new syllabi in winter for 132 and 102.
- Remember to make sure there is a copy of your current personal syllabus on file in the Office.
- Take your class into the Computer Equipped Classroom some time. Talk to Sy or Michelle about scheduling a day to do it.
- Encourage your students to
 - ❖ Use the Math Lab
 - ❖ Use the Math Help Room
 - ❖ Seek help from you outside of class
 - ❖ Participate in the AMATYC competition
 - ❖ Participate in the "problem of the week" competition
 - ❖ Join the Math Club

DEPARTMENT COLLOQUIUM



We will have a Department Colloquium on Friday, October 13, 2000 at 2:30 p.m. in Room 3001. All members of our full- and part-time faculty are welcome, as well as students who are interested in mathematics. The speakers and titles are as follows:

1. Dr. Byung Hahn, Professor of Mathematics
Sinclair Community College
"Is the Whole Always Greater than any of its Parts?"
2. Dr. Lawrence K. Chilton, Assistant Professor of Mathematics and Statistics,
Air Force Institute of Technology
"Orthogonal Polynomials - What's All the Fuss?"

Refreshments will be served.



Math Department Retreat

On August 31, the Math Department held its annual retreat at the Bergamo Center in Beavercreek. Twenty-six faculty members and staff participated in the event, which gave us an opportunity to get to know one another better (Who would have guessed that AI used to drive a taxi?!), as well as to discuss professional issues.



The retreat included discussions on issues faculty members face in their teaching. Above Tom Wilson is shown leading the group through some exercises comparing how faculty members would grade certain mistakes made by students.

Later on, participants were challenged by the game "Who Wants to Be a Mathionaire!" based on the popular television show, and hosted by our own "Regis" Wilson. Pictured below, Emilia Collins, Charles McCracken, and Achintya Mukhopadhyay became the game's first "Mathionaires" by correctly answering seven levels of increasingly difficult questions. Sandra Berning, Jeanne Schlagetter, and John Sparks also became "Mathionaires."



Questions, Questions!

At this year's Department Retreat, one of our discussions centered on questions that we get from our students about course philosophy or policies. In this article we will look at responses to one of those questions, "Why do we have to memorize all of these formulas?" In future issues of *Mathnet* we will address some of the other questions that frequently arise as we teach our classes.



"Why do we have to memorize all these formulas?"

1. You can't always predict your future. What you may think is unnecessary to know now may be very important later – in your other classes or in your career.
2. Formulas that you memorize will be carried with you at all times, while reference books or technology may not always be available.
3. If you memorize a formula now, it is true you may forget it later. But you will be more likely to remember that at least it exists, and then you can look it up. *If you don't know about it, you can't use it.*
4. Memorization is a good exercise for the brain. It is a useful skill to be able to memorize things easily. The practice you get now may pay off in your career.
5. In our increasingly technological world, you need to be "unconsciously fluent" in the language of mathematics.
6. Memorizing a formula forces you to look more closely at the structure of the expression, thus increasing your understanding of how it works.

For instance, having memorized the quadratic formula and knowing its structure may help you avoid keying in on your calculator an incorrect expression, such as

$$-3 + \sqrt{5} \div 2$$

instead of

$$(-3 + \sqrt{5}) \div 2.$$





Euler Texts

After reading *Euler: The Master of Us All* by William Dunham this past Winter and Spring Quarters as part of the Book Club, I became intrigued to read more of the source documents referenced in the book, particularly the mathematics textbooks written by Euler.



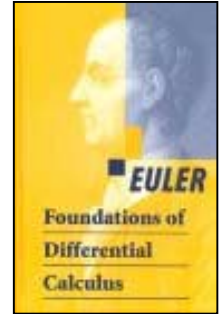
Through OhioLINK I was able to obtain copies from the Wright State University Library of the few textbooks translated (thus far) into English. One is the classic precalculus text *Introductio in analysin infinitorum*, or *Introduction to Analysis of the Infinite*, published in 1748 in two books, which was translated into English by John D. Blanton of St. John Fisher College and published by Springer-Verlag New York, Inc. in 1988. In the preface Euler writes, "I have striven to develop more adequately and clearly than is the usual case those things which are absolutely required for analysis." In the first book he confines himself to matters concerning pure analysis, including infinite series and products and continued fractions, and in the second he covers geometry, including a theory of curves, which encompasses, among other things, the conic sections.

One of the consequences of the text was that it made the function concept primary in mathematics. In Chapter 1 entitled "On Functions in General," Euler defines a function, and then he proceeds to classify the many varieties of functions. He defines functions as follows: "A function of a variable quantity is an analytic expression composed in any way whatsoever of the variable quantity and numbers or constant quantities." Though essentially equating the notion of "function" with that of "formula," his definition was actually a great improvement over the previous geometric notion of "curve." It should be noted that his definition did not purely capture the essential idea of functions known today, that being that to each x in the domain their corresponds one y in the range.

Dunham points out that "Euler's *Introductio* proved extremely significant, affecting later mathematics in content, style, and notation." Also he states that "[Historian Carl] Boyer recognized this influence when he wrote that it 'did for elementary analysis what the *Elements* of Euclid did for geometry.'"

I have only read a small portion of the *Introductio* so far, and have found it to be very enjoyable. Euler's clear and humble writing style makes reading it a real pleasure.

Other texts by Euler translated into English are the *Elements of Algebra* (1770), translated by John Hewlett, Springer-Verlag New York, Inc. (1840 Reprint) and *Foundations of Differential Calculus* (1755) [Part 1], translated by John D. Blanton, Springer-Verlag New York, Inc., © 2000. The latter text may be purchased at Amazon.com for \$59.95 (hardcover). Unfortunately, all of the other texts are out of print; however, requesting them through OhioLINK is a good way to obtain a copy.



I look forward to reading more of Euler's works, including more of the *Introductio* as well as the *Foundations*. Though often lacking the necessary rigor that characterizes modern-day mathematics, in these texts, as in his tremendous number of other writings, there are glimpses of pure thought of the highest order, and that offer deep, far-reaching insights into the mathematical frontier of his day. As Laplace said of Euler, "Read Euler, read Euler. He is the master of us all."

▪ David Stott

Part-time Faculty Recognition

A number of part-time faculty members were recognized at the Part-time Faculty Recognition Ceremony held during Fall Conference. These faculty members have provided a valuable and excellent service to the Department and to Sinclair students during their tenure at Sinclair. The Department would like to thank them for their willingness to invest of themselves at Sinclair and for their contributions to the life and ministry of the Department and College. The part-time members who were recognized and their years of service are as follows:

- **Five Year Award**
Ha Dao
Tadji Fallahi
- **Ten Year Award**
Annette Bragg
Byron Hall, Jr.
David Tsui
- **Fifteen Year Award**
Marilyn Thompson





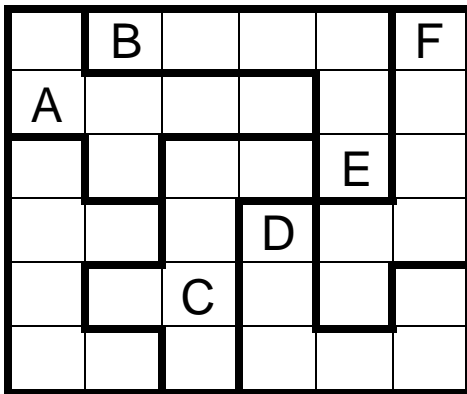
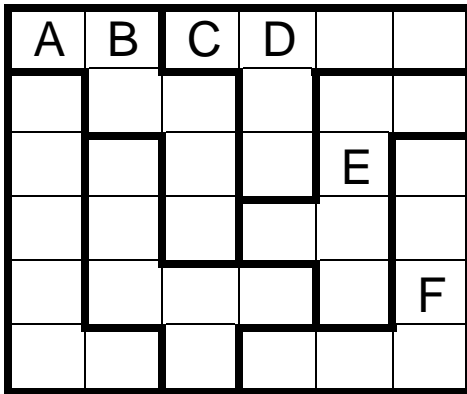
Just Thinking

- If you choke a smurf, what color does it turn?
- What do you call a male ladybug?
- Is it okay to use the AM radio after noon?
- What do chickens think we taste like?
- What do people in China call their good plates?
- What hair color do they put on the driver's license of a bald man?



Test Your Skills

Leonard Euler used the term "Latin square" to refer to a square filled with letters of the Latin alphabet in which each letter appears exactly once in each row and column. This puzzle gives a slight variation of a Latin square. Here you are asked to fill in the spaces with letters from A to F so that every letter appears once in each row, each column, and each outlined region.



Problem of the Week Award



Susan Harris presented Louis Sewell the Problem of the Week Contest Award this past Spring Quarter for submitting the most correct solutions to the weekly challenge problems posted in the Math Help Room. The contest will continue this year during the Fall and Spring Quarters with the top winner each quarter receiving a certificate and a \$40 prize.

Some clever anagrams (where each side has the same letters, only reordered):

- A Decimal Point = I'm a Dot in Place
- Eleven plus Two = Twelve plus One
- The Morse Code = Here Come Dots

Harvey's Joke Corner

After two weeks of studying parabolas, hyperbolas, and ellipses, students need "conic" relief.

Diploma mill ad: "Give us 60 minutes and we'll give you a degree."

Student: Can you give me partial credit for this incorrect rational expression?
Dr. Chew: Sorry. Fractions speak louder than words.

Rate the jokes found in this column:

$$\sum_{k=0}^n (HA)!$$

Lowest score: $n = 0$, what jokes?

Highest score: $n = \infty$, can't stop laughing!

Harvey Chew

