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FROM THE CHAIR



My how time flies. It seems like just yesterday I was writing to you about the high level of student interest in the new Math Help Room and my views on our last College Wide Learning Day. But that was a millennium ago! Since that

time I have nothing new to report about College Wide Learning Day, but I am pleased to say that we ended up with 1396 visits to the Help Room. Combining this figure with 4229 visits to the Math Lab gives 5625 visits. That is far and away the most number of times that students were helped outside of class by such department facilities. Indeed it is 1150 more than the previous record of 4475 visits to the Math Lab in the Winter of 1999. I would like to thank Dr. Jacobs, Dr. Wells and Dr. Sifferlen for their support in the establishment of this facility, as well as the department faculty who have helped to plan it, staff it, and put on the Open House.

It is a pleasure to enter a new millenium with tools such as the Help Room to try to better assist our students. Another potential tool is the Math 101 Learning Challenge Project, which is in full progress as of this quarter. In this innovative project under the leadership of Susan Myers, a set of 63 students has been divided into two halves after the first exam. One half, the half which we anticipate will be the 50% who are typically successful in this course, will continue the course using the traditional methods that are consistently successful for the top 50% of the students. The other half will be treated to an alternative teaching approach that will include special counseling, a repeat of the material covered on the first exam, increased individualized attention from not only the instructor but two in-class tutors, computer tutorials,

specially designed activities, and three extra weeks to complete the course. Susan Harris is teaching the alternative section and Kay Cornelius the traditional section. The project's committee, which includes seven other faculty members besides those mentioned, has worked uncommonly hard planning this project, and I am firmly convinced that if there is any potential for success in this idea they will achieve it. Stay tuned for reports on how this is going.

The next most interesting thing that happened to me since the last millennium was my trip to Pittsburgh to attend the twenty-fifth annual American Mathematical Association of Two-year Colleges Conference. I was able to attend ten different sessions, no less than eight of which were worth going to. That's not a bad success rate. I'll limit my comments to one of these sessions, the keynote address by Dr. Lynn Arthur Steen. Dr. Steen challenged us as community college mathematics educators to be at the forefront of the discussion between the community, the government, and all college educators over the next twenty-five years in deciding what mathematics and how mathematics should be taught. He pointed out that 40% of all college students taking mathematics are taking it in a community college, and 50% of all students taking freshmen calculus are taking it in a community college. He indicated that because of our close associations with industry and because many of our students are out working in the community, as well as many of them being parents of students in our schools, we are therefore in the best position to know what mathematics the people of this country need to know and how best to enable them to learn it. His case for the unique position and important responsibility of community college mathematics educators was a compelling one, and I believe we must strive to be up to the challenge. So do your best and have a great millenium!

Al Giambrone ■



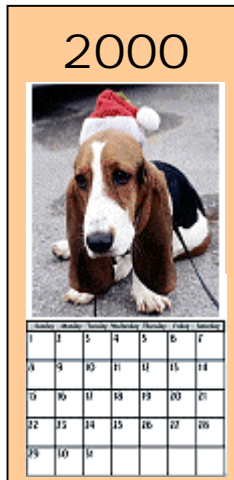
Calendar corrections not a leap of faith

Everyone knows century years - 1700, 1800, 1900, etc., - are not leap years. Yet 2000 will be a leap year. Why the exception? What's so special about 2000? Besides, why do we have leap years anyway?

The whole problem comes from the fact that it takes 365.2422 days for the Earth to travel around the sun in orbit. If it were an even 365 days, our calendar would have 365 days every year. Since it's not 365, but 365.2422, the extra fraction causes a problem. Our calendars have to be in full days. We can't have a little 0.2422 day - or 5.8128 hours - at the end of the year.

Seasons are determined by where we are in orbit, not by how many days since the year started. We want our seasons to be based on the calendar. If we had 365 days every year, the fractional days would add up so the seasons wouldn't be fixed to the calendar. Eventually we would have our hot summer weather in December and our snow in July!

In March 1582, Pope Gregory XIII refined the calendar, creating the "Gregorian" calendar. In the Gregorian



calendar, under which we live, there is normally a leap year every four years, when we add an extra day. This extra 24-hour day each leap year nearly corrects for the extra 0.2422 day of orbit time....

But a leap year every four years adds 0.25 day, when we need only 0.2422 day. That means we are still making an error of 0.0078 day each year. The error would still build up so eventually seasons would not match the calendar.

Over 400 years, with a leap year every four years, the over-correction would add up to 3.12 days. Some way had to be determined to get rid of three leap years every 400 years. This would reduce the error to only 0.12 day every 400 years. Not bad.

So Pope Gregory said no century year would be a leap year unless it was divisible by 400. This would get rid of three days of the error. The year 2000 is divisible by 400, so it is a leap year, even though 1700, 1800, and 1900 were not leap years.

If you want to plan ahead, the remaining error of 0.12 day every 400 years would build up to nearly a whole day in 3332 years. So sometime around the year 5332, we have to skip an extra leap year. Mark your calendars.

Thomas V. Brown ■

Variation Quiz

Test your variation intuition! For each of the following statements decide whether the variation referred to should be direct variation or inverse variation. (Solutions are on the bottom of page four.)

Reynolds' Law of Climatology

Wind velocity increases _____ with the cost of the hairdo.

Greta's Law of Supply and Demand

The number of trick-or-treaters who come to the door is _____ proportional to the number of treats on hand.

Zadra's Law of Biomechanics

The severity of the itch is _____ proportional to the reach.

Edington's Theory

The number of different hypotheses erected to explain a given biological phenomenon is _____ proportional to the available knowledge.

Klipstein's Second Law

Firmness of delivery dates is _____ proportional to the tightness of the schedule.

Bellotti's Computer Axiom

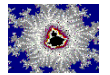
Your ability to recall the name of a file is _____ proportional to its importance.

The Quality Factor

Quantity is _____ proportional to quality.

Winfield's Dictum of Direction-Giving

The possibility of getting lost is _____ proportional to the number of times the direction-giver says, "You can't miss it."



Book Club

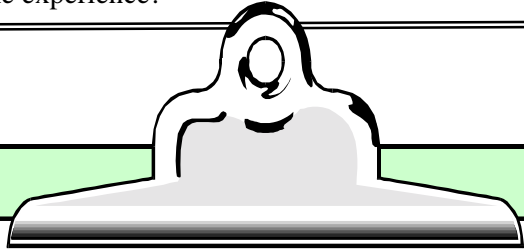


The Book Club will be reading another selected book this winter and spring quarters. The book is *Euler: The Master of Us All*, by William Dunham. This book provides a glimpse into Euler's tremendous contributions to mathematics that spans over six decades. Each chapter describes his contributions to eight different topics – number theory, logarithms, infinite series, analytic number theory, complex variables, algebra, geometry, and combinatorics. The section begins with a prologue to establish the historical context and then proceeds to a detailed consideration of one or more Eulerian theorems on the subject at hand. The chapter concludes with an epilogue surveying subsequent developments or addressing related questions that remain unanswered to this day.



Euler: The Master of Us All samples the work of a mathematician whose influence, industry, and ingenuity are of the highest order.

If you wish to participate in the Book Club, contact Lyn Keeler or David Stott. The book can be purchased from www.amazon.com, and it lists for \$29.95. The Book Club will have a lunch outing at the end of Spring Quarter. A suggested reading schedule will also be available in the Department Office. Hope you can join in the experience!



REMINDERS

- Please remember that all students in Math 101 and Math 102 are to take a two-part final exam. The first part is designed by the department and is forty minutes long. The second part is to be designed by the instructor and is to be fifteen minutes long.
- Help us in providing instructors with desk copies by returning texts that you are not using this quarter so that we can have them available for instructors that are teaching that course.
- Please remind your students to take advantage of the Math Lab and Math Help Room. Also, be sure to let them know that this quarter there is extended staffing into the evening hours in the Help Room.
- Students expect classroom instruction to supplement what they find in their textbook, and rightly so. Good instruction consists of more than just repeating examples that appear in the text and answering student's questions on homework exercises.
- Please do not skip material on the syllabus or modify the number of tests given without consulting with your course coordinator.
- Students receiving the accommodation for calculator use in Math 101 by Disability Services must present documentation to you from the Disability Services Office. Then you should administer to them the two-part exams prepared by the department. They are available in the Office.

DEPARTMENT COLLOQUIUM



We will have a Department Colloquium on Friday, February 11, 2000, at 2:30 p.m. in Room 1001. 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. Mr. John C. Sparks, Senior Staff Engineer
Air Force Research Laboratory / Wright Site
Project Technology
“Probability over Serbian Skies”
2. Dr. Mark E. Oxley, Associate Professor of
Mathematics, Air Force Institute of Technology
“Arrangement of Hyperplanes (Cut the Cheese)”

Refreshments will be served.



Technology Workshops

Several technology workshop opportunities are being planned for the winter and spring quarters. These will include the new software in the Computer Classroom – Cyclone, the Windows version of Derive, and the Windows version of BestGrapher. Other topics of interest may also be included. If there are any additional topics you would like to see included, please share this with Lyn Keeler or David Stott.

Just Thinking

There were three Indian squaws. One slept on a deerskin, one slept on an elk skin, and the third slept on a hippopotamus skin. All three became pregnant and the first two each had a baby boy. The one who slept on the hippopotamus skin had twin boys. This goes to prove that the squaw of the hippopotamus is equal to the sons of the squaws of the other two hides.

This one's for Harvey:

There's a guy who wrote these nine puns. He entered them and one other into a contest. He figured with ten entries he couldn't lose. As they were reading the list of winners he was really hoping one of his puns would win; unfortunately, no pun in ten did.

The rest of this month's column consists of a quiz, the answers to which appear below.

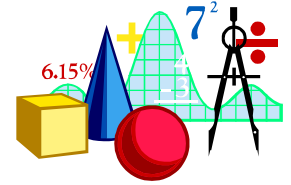
- Q1. How do you put a giraffe into a refrigerator?
- Q2. How do you put an elephant into a refrigerator?
- Q3. There is a conference of all of the animals. Which animal is not there?
- Q4. How do you swim across a river where alligators live?

John Pfetzing ■

Variation quiz solutions: All statements reflect inverse variation except the first and last.
John's quiz solutions: A1. You open the door, put in the giraffe and close the door.
 A2. You open the door, take out the giraffe, put in the elephant, then close the door.
 A3. The elephant. He is in the refrigerator.
 A4. You just swim across. All the alligators are at the conference.

Test Your Skills

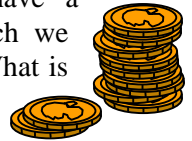
We hope you have time to investigate this problem, and to offer your solution to either Lyn Keeler or David Stott.



The False Coin



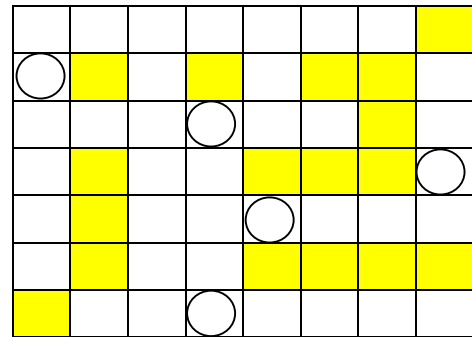
Suppose we have eight coins, all of the same weight except for one false coin that has a weight different from the rest. Suppose also that we have a simple balance with which we can compare the weight of the coins. What is the least number of weighings it would take to determine which coin is the false coin?



Harvey's Joke Corner

Scrambler Fill-in

In this variation of a crossword puzzle, you are asked to solve the clues (anagrams are given to help you), then decide where to place the answers in the grid. When you are done, if you rearrange the circled letters you will learn the favorite geometry course taught at WPAFB.



- Escaped parrot?
- Reduce
- Constructed triangle of binomial coefficients
- Empty set
- Math Dept. chair
- Statistical technique
- Four qts.
- Inmate in Lima, Ohio?
- Not the same
- Not off

- GLOPNYO
- NECCAL
- SCAPLA
- ULNL
- LA
- LASPEM
- ALG
- CAMLION
- QENUALU
- NO



Harvey Chew ■