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MSCS Mess

Department of Mathematics, Statistics and Computer Science — March 6, 2006
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This Week's Colloquium

Title:	A Matter of Life and Death: Actuarial Challenges in Product Development
Speaker:	Tracy Anderson, Federated Insurance Company
Time:	Tuesday, March 7, 1:30 p.m. (treats at 1:15)
Place:	SC 182

Life insurance actuaries deal with mortality on a daily basis—but only in the abstract, of course! Tracy Anderson of Federated Insurance is one of those actuaries. In this talk, he will describe the process, theory, and challenges of attempting to create a product that satisfies management, marketers, clients, and regulators. He will present a real world problem that requires concrete mathematical and statistical applications.

Tracy Anderson is Director, Life Actuarial at Federated Insurance Company in Owatonna, Minnesota. He graduated from St. Olaf in 1984 with a degree in mathematics and a concentration in statistics, then spent 19 years working as a life insurance actuary for American Express Financial Advisors. In 2004 Mr. Anderson joined Federated as the head of its Life Actuarial area.

Meet the Speaker

Mr. Anderson will be available after his talk to meet with students who are interested in learning more about the actuarial profession and opportunities for employment, both at Federated and in general. Contact Paul Roback (roback@stolaf.edu) for more information.

Problem of the Week (POW)

This one goes out to those who have had or are in abstract algebra.

Let S be a set with an associative multiplication, $(x,y) \rightarrow xy$. Suppose that for all x, y in S, $x^3 = x$ and $x^{2y} = yx^2$. Show that the multiplication is commutative.

*** Please submit all solutions by Wednesday at noon to Amelia Taylor by e-mail (ataylor@stolaf.edu) or by placing them in her box at OMH 201.

New Faculty Spotlight: Christine Kohnen

The famous statistician John W. Tukey once said, "The best thing about being a statistician is that you get to play in everyone's backyard." New faculty member Christine Kohnen agrees. She loves statistics because "[Statisticians] have the ability to work on problems from many different fields over the course of their careers."

Long before she became a statistician, Christine Kohnen was a little girl growing up just west of the Twin Cities. She developed a love of numbers at an early age and enjoyed doing simple calculations. Once she reached high school, however, Christine began to feel that young females should not enjoy and excel in mathematics, so she changed her focus to science. She eventually enrolled at St. Olaf with plans to major in chemistry.

But it was not to be. After taking a course with Professor Paul Humke during her first semester at St. Olaf, Christine's interest in mathematics was rekindled—although she always felt that Professor Humke tricked her (and his students) into learning! Christine briefly considered becoming an actuary, but eventually found her calling after a statistics class with Professor Emeritus Jerry Ericksen. His enthusiasm for statistics was contagious!

After graduating from St. Olaf in 2000, Christine began graduate work at Duke University in Durham, North Carolina. She received her M.S. in Statistics in 2002 and her Ph.D. in Statistics in 2005. Christine has done research in both Bayesian Model Averaging and the development of methods for secure multi-party data sharing, which incorporates ideas from both multiple imputation and data confidentiality. She joined the St. Olaf MSCS department in Fall 2005.

Last Week's Problem

Suppose *p*, *q*, and *r* are positive integers no two of which have a common factor larger than 1. Suppose *P*, *Q*, and *R* are positive integers such that $\frac{P}{p}+\frac{Q}{q}+\frac{R}{r}$ is an integer. Prove that each of $\frac{P}{p}, \frac{Q}{q}$ and $\frac{R}{r}$ is an integer.

Sadly, no one submitted any solutions to this POW. But here's the correct solution…

Let $A=\frac{P}{p}+\frac{Q}{q}+\frac{R}{r}$. Multiplying both sides by pqr, we get $Apqr = Pqr + Qpr + Rpq$. Then $Pqr = Apqr - Qpr - Rpq = p(Aqr - Qr - Rq)$. Hence *p* divides *Pqr*. However, since the greatest common denominator (gcd) of *p* and *q* is 1, and the gcd of *p* and *r* is also 1, p must divide *P*. Therefore, $\frac{P}{p}$ in an integer.

Rearranging the equation in a similar fashion and using the same argument about the gcd and divisibility proves that q divides Q and r divides R, so $\frac{Q}{q}$ and $\frac{R}{r}$ are integers.

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