

Augarithms



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December 3, 2003

Colloquium Series Dates for Fall 2003

Colloquia are held on Wednesdays from 3:40 to 4:40 p.m. in Science 108. Except for the names of some of the speakers, here is the schedule of dates for the 2003-2004 academic year:

Dec. 3 Glen Meeden, University of Minnesota

This week's speaker: Glen Meeden, U. of M.

Fuzzy Confidence Intervals for a Bernoulli Probability



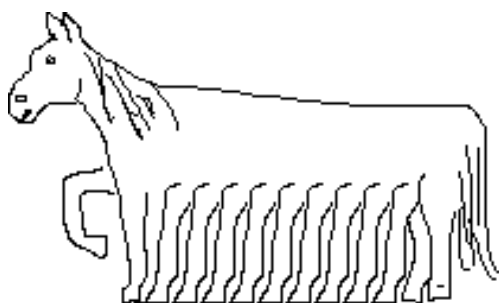
Glen Meeden

The usual confidence intervals for a Bernoulli probability perform poorly for small and moderate sample sizes. The problem is that these conventional confidence intervals are not based on the uniformly most powerful unbiased two-sided tests. A new confidence interval notion, called fuzzy confidence intervals, will be introduced. It is based on these tests and its actual coverage probability will equal its announced coverage probability.

Mathematical Proofs...

Here is the second in our series of mathematical "proofs" compiled in the May 1961 edition of *OPUS*, by Joel Cohen. Don't forget: The later "proofs" rely on the earlier ones, so save them. Last issue we proved *Lemma 1* by induction: All horses are the same color. This week we have

Theorem 1: Every horse has an infinite number of legs (Proof by intimidation).



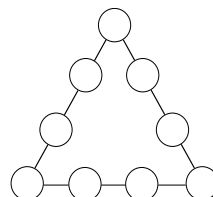
Proof: Horses have an even number of legs. Behind they have two legs and in front they have forelegs. That makes six legs, which is certainly an odd number of legs for a horse. But the only number that is both odd and even is infinity.

Therefore horses have an infinite number of legs. Now to show this in general, suppose that somewhere there is a horse with a finite number of legs. That is a horse of a different color, and by the lemma, that does not exist.

Puzzle & Problem...

There were several solutions to last issue's puzzle in which you were asked to fill in a 6×6 grid according to certain restrictions. There were 10 different solutions among the 14 solvers, who were **Nora Austin, Jenna Bracken, Kasi Clauson, Crystal Creighton, Abraham E. Dominguez, Jill Graf, Kao Her, Kasey Mathers, Abbey Payeur, Chrissy Piram, Antonio Spargo, Pa Kou Yang, and Barb Yau.** Here is this week's puzzle:

Place the numbers 1 through 9 into the circles at right in such a way that the sums of all three sides of the triangle be equal.



Last week's problem concerning the two ascetics had two solvers, **Kasi Clauson** and **Chrissy Piram.** There were also a few answers without solutions: some right and some not. Please indicate how you solve the problems. Here is this week's problem: A student reported that in a recent game of Monopoly™, eight consecutive rolls of the two dice had produced doubles (the same number on each die). What is the probability of that happening?

Send your solutions to the editor at kaminsky@augsborg.edu, or drop them in the P & P box just inside the math suite, Science Hall 137.

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*The Bi-weekly Newsletter of
the Department of
Mathematics at Augsburg College*

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Seasons Greetings from some of the voices of Augsburg

Vrolijk Kerstfeest
 Feliz Navidad
 Gott Nytt År
 Buon Natale
 Mutlu Yillar
 Bonne Année
 HAPPY NEW YEAR
 Merry Christmas
 Joyeux Noël
 חג שמח
 BAGA AYYAANA WAGGAA GEESSAN!!
 Arabaina tratin'ny
 NYOB ZOO XYOO TSHIAB
 Próspero Año Nuevo
 Yeni Yiliniz Kutlu Olsun
 Buon Capodanno
 Taom-baovao
 Fröliche Weihnachten
 Haaskaa Joulua

Mathematician Biography-William Gossett (1876-1937), discoverer of *Student's t-distribution*



William Gossett

William Sealy Gosset was educated at Winchester, then entering New College Oxford where he studied chemistry and mathematics. While there he studied under George Airy. Gosset obtained a post as a chemist in the Guinness brewery in Dublin in 1899 and did important work on statistics. He invented the *t*-test to handle small samples for quality control in brewing. He wrote under the name "Student". Gosset discovered the form of the *t* distribution by a combination of mathematical and empirical work with random numbers, an early application of the Monte-Carlo method. A personal friend of Gosset writes:

To many in the statistical world "Student" was regarded as a statistical advisor to Guinness's brewery, to others he appeared to be a brewer devoting his spare time to statistics. ... though there is some truth in both these ideas they miss the central point, which was the intimate connection between his statistical research and the practical problems on which he was engaged. ... "Student" did a very large quantity of ordinary routine work as well as his statistical work in the brewery, and all that in addition to consultative statistical work and to preparing his various published papers.

In 1922 he was given a statistical assistant at the brewery, and he slowly built up a small statistics department which he ran until 1934. Gosset certainly did not work in isolation. He corresponded with a large number of statisticians and he often visited his father in Watlington in England and on these occasions he would visit University College, London and the Rothamsted Agricultural Experiment Station. He would discuss statistical problems with Fisher, Neyman and Pearson. In 1934 Gosset had a motor accident::

...he ran into a lamp-post on a straight road, through looking down to adjust some stuff he was carrying...

In fact when confined to bed for three months after the accident he was able to concentrate on statistics. It was a year before he was recovered but he retained a limp for the remaining few years of his life. At the end of 1935 Gosset left Ireland to take charge of the new Guinness brewery in London. Despite the hard work involved in this venture he continued to publish statistics papers. A personal friend describes Gosset as follows:

... he was very kindly and tolerant and absolutely devoid of malice. He rarely spoke about personal matters but when he did his opinion was well worth listening to and not in the least superficial.

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