

## 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:

- Nov. 5 Andrew Pole and Eric Bibelnieks, Guest Research and Analytics for Target.Direct, Target Corporation
- Nov. 19 Randy Erdahl, Decision Intelligence, Inc.
- Dec. 3 Glen Meeden, University of Minnesota

## This week's talk...

Learn how to earn fabulous discounts and offers from Target™

**Speakers: Andrew Pole & Eric Bibelnieks**



Eric Bibelnieks

Andrew Pole

Using data and statistical techniques, *target.direct's* Guest Research and Analytics team provides insights that allow Target Corporation to market discounts and offers to their best guests while driving the bottom line. Learn how the Guest Research and Analytics team's interacts with the decision makers at Target Corporation through examples of their work. These examples include:

- 1) how confidence intervals decide the fate of Marketing campaigns,
- 2) how clustering defends Mossimo Fashion from everyday basics,
- and 3) how linear regression sells dog food.

## Some things *not* to do at a job interview or thesis defense..

Written by Master Peter Dutton; contributions by Jim Lalopoulos, Alison Berube, Jeff Choen, Patricia Whitson and a few others.

Do *not*...

- 1) ...say "Ladies and gentlemen, please rise for the singing of our national anthem."
- 2) ...say "Anyone here as wasted as I am?"
- 3) ...say "Ladies and gentlemen, as I dim the lights, please hold hands and concentrate so that we may channel the spirit of Sir Isaac Newton."
- 4) ...start the proceedings with a sing-along of 'Kumbaya.'
- 5) ...say (wearing a lampshade on your head, and acting a little drunk) "I suppose you're wondering why I've called you here this afternoon."
- 6) ...say "Please phrase your question in the form of an answer."

## Law of Large Numbers (1713)<sup>†</sup>

This theorem was proved by Swiss mathematician Jakob Bernoulli (1654-1705). This is the fundamental principle of STATISTICS that the sequence  $x_n/n$  tends to  $p$  where the random variables  $x_n$  have common mean  $p$ . This implies that the relative frequency of an event of probability  $p$  tends to  $p$  as the number of trials tends to infinity.

The weak law of large numbers asserts that the limit holds in measure by use of the weak convergence defined by Ernst Fischer (1875-1959); and the strong law of large numbers asserts that the limit holds pointwise by use of the strong convergence defined by Friedrich Riesz (1880-1956). These are correct versions to replace the law of averages; the erroneous idea that after repetitions of one outcome the others become more likely.

T W Anderson, *An Introduction to Multivariate Statistical Analysis* (New York, 1972)

<sup>†</sup>Reprinted with permission from *Dictionary of Theories*, by Jennifer Bothamley, Visible Ink, Detroit

*Augarithms* is available on-line at [augsborg.edu/math/augarithms/](http://augsborg.edu/math/augarithms/). Click on the date you want to see.

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## Augarithms

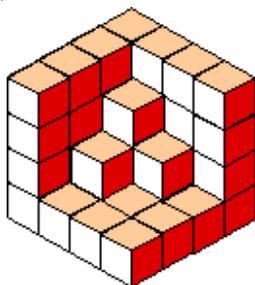
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## uzzle & Problem...

Last issue's puzzle about connecting points without forming a triangle was solved correctly by **Adam Ketcher, David Wallace, Hung Nguyen, Kasi Clauson, Jolene Jensen, Becky Johnson, Eric Lundberg, Andrew Held, and John Staten**. Here is this week's puzzle:



Assume that the hidden blocks in the picture above are in place. How many additional blocks are needed to fill the empty region to complete the cube?

Last issue's problem about inserting numbers into blanks had several solvers. The claim of a unique solution seems to have been a slight exaggeration. The expected solution was  $\{1, 7, 3, 2, 1, 1, 1, 2, 1, 1\}$ , and was found by **Steven Lee** of Thrivent, **Britta Boyum, Andrew Held, Becky Johnson, Jolene Jensen, Ambrose Wolf, Hung Nguyen, Doug Green, and Adam Ketcher**. Other interesting solutions were  $\{\text{one, one, one, one, one, one, one, one, one, one}\}$  by **Dave Wallace**, and  $\{1, 11, 2, 1, 1, 1, 1, 1, 1, 1\}$  by **Steven Lee** and **Hung Nguyen**. Here is this week's problem:

Cards from a well-shuffled deck are turned up one at a time until the first ace appears. On average, how many cards are needed to produce the first ace?

Send your solutions to the editor at [kaminsky@augsborg.edu](mailto:kaminsky@augsborg.edu), or drop them in the *P & P* box just inside the math suite, Sci 137.

## Announcements...

### 1) Unbounded Meeting:



**James Glaisher**

The Unbounded Club will be meeting on Wednesday, November 5 after the math colloquium to celebrate the birthday of James Whitbread Lee Glaisher and to talk about upcoming events.

**James Glaisher** was born on November 5, 1844 in Lewisham, England and attended St Paul's School in London, winning a scholarship in 1867 to study at Trinity College, Cambridge. His mathematical research began while he was still an undergraduate and he wrote a paper on the sine integral, cosine integral and exponential integral giving tables of these integrals which he had computed himself. In the final examination of 1871, Glaisher was placed second. Elected to a fellowship at Trinity College, he be-

came a tutor and lecturer and taught at Cambridge all his life. In the same year in which he graduated, Glaisher joined the Royal Astronomical Society and in 1872 joined the London Mathematical Society.

Glaisher wrote over 400 articles on his main interests of astronomy, special functions, calculation of numerical tables and the history of mathematics. His historical interests were on the early development of numerical computation and he applied special functions to problems in number theory. James Glaisher is quoted as saying

*"The value of pi has engaged the attention of many mathematicians and calculators from the time of Archimedes to the present day, and has been computed from so many different formulae, that a complete account of its calculation would almost amount to a history of mathematics."*

The importance of Glaisher is less in the original research he did, and much more in that he brought these mathematical topics into the Cambridge curriculum. The earliest years of his teaching at Cambridge were a time of transition in the mathematical ideals of the University, setting it up to produce the outstanding mathematicians who were educated there shortly afterwards. Glaisher died on December 7, 1928 in Cambridge, England.

Source: <http://www-gap.dcs.st-and.ac.uk/~history/Mathematicians/Glaisher.html>

- 2) What: *Arcadia*, a play by Tom Stoppard. Directed by Matt Sciple.  
When: 8 p.m. Friday-Saturday, 7 p.m. Sunday (2 p.m. Nov. 9)  
Where: Theatre in the Round, 245 Cedar Ave., S., Minneapolis.  
Review: Stoppard is an amazing mind, and his drama soars.  
Tickets: \$20. 612-333-3010; <http://www.theatreintheround.org>.
- 3) What: Breaking Myths in Drag Racing Folklore, by Richard Tapia, Noah Harding Professor of Computational and Applied Mathematics, Rice University  
When: 7 p.m., November 20, 2003  
Where: 100 Smith Hall, 207 Pleasant St. SE, Minneapolis, Univ. of Minn.
- 4) What: Fifth Annual University of Minnesota Actuarial Career/Internship Fair! This is a great way to create network opportunities between actuarial students and the business community. The fair will provide a mutually beneficial experience to students and the business community. Companies from around the Minneapolis and St. Paul metro area will be in attendance. Companies will be looking for full-time or internship opportunities, as well as informing about actuarial careers.  
When: 2 p.m. - 5 p.m., November 18  
Where: Carlson School of Management, Lower Level Private Dining Room, L-150. Hors d'oeuvres will be served.  
Contact: Caleb Johnson ([john4274@umn.edu](mailto:john4274@umn.edu)) or Seth Quiggle ([quig0025@umn.edu](mailto:quig0025@umn.edu))