

# Augarithms



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February 4, 2004

## Colloquium Series Dates for Spring 2004

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:

Feb.	4	Mark Kaiser, Iowa State University*
Feb.	18	TBA
Mar.	3	Thomas Sibley, St. John's University
Mar.	31	Augsburg Students
Apr.	14	Augsburg Students

## Unbounded to meet for poetry & t-shirt contests

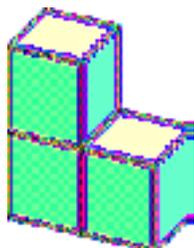
Augsburg Math's Unbounded will meet at 4:40 p.m., after the February 4th colloquium. At the meeting the poems submitted to the *Unbounded Poetry Contest* will be read and Unbounded will then select those to be submitted to Murphy Square.

Unbounded is also holding a *T-Shirt Design Contest*. Submit your design for the Augsburg Mathematics Department T-shirt. Entries are due 5 p.m., February 13. See the flyers for more details.

## Puzzle & Problem

We had but one solver who found Chef Pierre's menu strategy. **David Wallace** deduced that Pierre was charging \$1.00 per vowel and \$2.50 per consonant for items on his menu. There was no charge for the ingredients.

For this week's puzzle, I have glued together three cubes into a block (a cub-bit), shown in the Figure. Can I build a  $3 \times 3 \times 3$  cube from nine such blocks? If so, how?



There were two solvers to the 'brick problem' of the last issue. They were

Augsburg's **David Wallace**, and ACTC student **Aaron Smith**.

The elevator in my apartment building (66 floors) has only two buttons, *U* and *D*. When you push the *U*-button the elevator goes up 8 floors (or not at all if there aren't 8 floors available); when you push the *d*-button it goes down 11 floors (or not at all). Is it possible to take the elevator from any given floor to any other given floor?

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.

## \*This week's talk--The Many Faces of Probability in Statistical Analyses



Mark S. Kaiser

Mark S. Kaiser, Department of Statistics, Iowa State University

Statistics as a discipline is characterized by the use of probability in making formal statements of inference about scientific problems based on sets of observed data. As a starting place in learning about statistics it would then seem obvious to ask, "What is probability?" But this is not what is typically done. Rather, introduc-

tory courses usually begin with a presentation of properties of probability, and rules for computation (what is known as the *probability calculus*). Why is this? The answer is that probability is a mathematical concept that eludes exact definition. In fact, there are many competing concepts of probability. This talk will focus on three common probability concepts used in statistical analysis, Laplacian probability, relative frequency probability, and epistemic probability. Examples that illustrate the use of these probability concepts will be discussed, including a aquatic nutrient enrichment experiment in Thailand, an investigation of the teratogenic effects of Selenium in the Central Valley of California, and a study of sex ratio at birth in Guanacos from South America.

*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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## Mathematical Proofs

Today we present the fourth and next to last installment in our series of mathematical “proofs” compiled in the May 1961 edition of OPUS, by Joel E. Cohen. Up to now we have proven the following:

**Lemma 1:** *All horses are the same color (by induction).*

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

**Corollary 1:** *Everything is the same color.*

And now, we will prove:

**Corollary 2:** *Everything is white.*

**Proof:** If a sentential formula in  $x$  is logically true, then any particular substitution instance of it is a true sentence. In particular then: ‘for all  $x$ , if  $x$  is an elephant, then  $x$  is the same color’ is true. Now it is manifestly axiomatic that white elephants exist (for proof by blatant assertion consult Mark Twain) ‘*The Stolen White Elephant*’). Therefore all elephants are white. By Corollary 1, everything is white.

## Cartoon Corner



ValuPak University math department embed,  
Professor Fogelfroe takes questions.

## Died on this day: Giambattista Della Porta



Giambattista della Porta

Born on November 1, 1535 in Vico Equense (near Naples), Italy, **Giambattista della Porta** was educated at home where discussions on scientific topics frequently took place. His father, from 1541, was in the service of Emperor Charles V and della Porta was well educated by private tutors. Charles V was Holy Roman emperor and king of Spain at this time and his empire extended across Europe to the Netherlands, Austria and the Kingdom of Naples.

Della Porta travelled widely in Italy, France and Spain always returning to his estate near Naples where he was able to study in peace. He never needed to earn a living as the wealth of the family seems to have been sufficient to allow della Porta to devote himself to study.

In 1579 della Porta moved to Rome and entered the service of Luigi, cardinal d'Este, and frequented the court of Duke Alfonso II d'Este at Ferrara. He also lived in Venice while working for the Cardinal. In fact he was one of a number of dramatists who worked for the Cardinal, like Torquato Tasso, the greatest Italian poet of the late Renaissance. Della Porta, however, also undertook scientific work for the Cardinal, making optical instruments for him while in Venice.

Della Porta's work was wide ranging and, having studied refraction in *De refractione, optices parte* (1593), he claimed to be the inventor of the telescope although he does not appear to have constructed one before Galileo.

Other topics he wrote on include cryptography in *De furtivis literarum* (1563), mechanics and squaring the circle. He was the first to propose adding a convex lens to the camera obscura. He described a steam engine in *De' spiritali* (1606) and he was the first to recognise the heating effect of light rays.

Della Porta formed a society, Accademia dei Segreti dedicated to discussing and studying nature, which had regular meetings at his home. This

Society was closed down by the Inquisition about 1578 after they examined della Porta. In 1585 he joined the Jesuit Order but his support of the Roman Catholic Church did not prevent the Inquisition from banning publication of his work between 1594 and 1598.

Della Porta's major work is *Magia naturalis* (1558), in which he examines the natural world claiming it can be manipulated by the natural philosopher through theoretical and practical experiment. The work discusses many subjects including demonology, magnetism and the camera obscura.

Della Porta also published *Villae* (1583-92), an agricultural encyclopaedia and *De distillatione* (1609), describing his work in chemistry.

Della Porta died February 4, 1615 in Naples, Italy.

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