Augarithms

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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:

Mar.	3	Thomas Sibley, St. John's University*
Mar.	31	Augsburg Students
Apr.	14	Augsburg Students

Results of the Donut Coloring Contest held 2/25/04.

Contest Winners: **Dan Wolf** and **Hung Nguyen**.

Dan and Hung each created maps on the donut requiring 6 colors. Dan won a $5 Davanni's gift certificate and a copy of The Code Book. Hung won a $5 Davanni's gift certificate and a set of Tangrams.

Doornut Prize winners:
Tim Bancroft - Tavern Puzzle
Jenna Bracken - Double Tangram set.
Robby Collins - $10 Davanni's gift certificate.
Andy Held - Block by Block puzzle/game.
John Ricker - Beyond Numeracy
Sayra Smith - the card game SET.

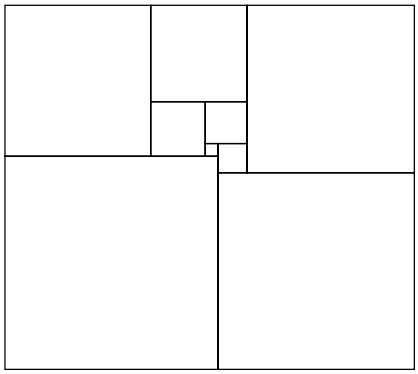
Most participants also received Mathematical Association of America temporary tattoos.

A special thanks to the members of *Unbounded* for organizing the event and the Mathematics Department and Unbounded for sponsoring the event.

If you would like to be placed on the Unbounded mailing list, contact Heather Greene, Unbounded president, at greeneh@augsburg.edu.

Puzzle & Problem

Chrissy Piram provided a correct answer to last issue's puzzle concerning tetrominoes. Here is this week's puzzle: The figure below is made up of nine squares. If the area of the smallest square were four square inches, is



it possible to determine the area of the entire rectangle?

Part a) of last issue's problem concerning breaking a stick at a random point was solved by **Paul Schumacher** of Winona State University. And here is this week's problem: Samuel Pepys wrote Isaac Newton to ask which of three events is most likely: that a person get (a) at least 1 six when 6 dice are rolled, (b) at least 2 sixes when 12 dice are rolled, or (c) at least 3 sixes when 18 dice are rolled. Which is it?

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

*Donut Coloring or Toroidal Chromography:

Tom Sibley--St. John's University

Tom Sibley (l.) judging a donut-coloring contest

In your recent donut coloring contest, I hope many of you created maps requiring more than 4 colors, the maximum ever needed on a plane. There is a maximum number for maps on a donut as well. In this talk I will discuss map coloring and give a proof of what the maximum number of colors is on a donut. I'll also show off my inner tube with a map needing that many colors.

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

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Born on this day--Andrew Paul Guinand

Andrew Guinand

Born March 3, 1912 in Renmark, South Australia, **Andrew Guinand**, always known as Andy, went to school at St Peter's College, Adelaide from 1924 to 1929. He then entered St. Mark's College of the University of Adelaide in 1930 to study mathematics, graduating in 1933. He was a great sportsman in his university days, described as follows:

> *... it is recorded that he was a proficient gymnast, he rowed with the Torrens Rowing Club, and he competed in bicycle races with the South Australia Amateur Cycling Association.*

In 1934 Guinand was a Rhodes Scholar at Oxford. This was the typical route for the top Australian academics at that time, and Guinand studied at Oxford for his doctorate under Edward Titchmarsh's supervision. One of the examiners for his thesis was Hardy:

> *Andy in later years treasured a note from Hardy asking him to postpone his oral examination because he (Hardy) had been asked to play in a cricket match for the Trinity College Servant's Team.*

In session 1937/38 Guinand studied at Göttingen, then in 1939/40 at Princeton in the United States. In 1940 he joined the Royal Canadian Air Force, returned to England and was a navigator on many missions. When he was stationed 70 km from Oxford he would ride there on his bicycle to continue his mathematical research.

After being an assistant at Cambridge, he became a lecturer at the Royal Military College of Science in 1947. He was promoted to Associate Professor of Mathematics before returning, in 1955, to a chair at the University of New England at Armidale which lies on the valley slopes of Dumaresq Creek in the New England Range in New South Wales, Australia.

During his two years at Armidale he was Head of Department, then he left to take up a post in Edmonton, Canada at the University of Alberta. His next appointment was to the University of Saskatchewan in 1960, then in 1964 he became the first chairman of the mathematics department at Trent University in Peterborough in southeastern Ontario, Canada. Trent University, 115 km east-north-east of Toronto, had been founded in 1963.

Guinand worked on summation formulas and prime numbers, the Riemann zeta function, general Fourier type transformations, geometry and some papers on a variety of topics such as computing, air navigation, calculus of variations, the binomial theorem, determinants and special functions. W. N. Everitt wrote:

> *As a student of Titchmarsh in Oxford in the years immediately before the second world war it was natural that Guinand's research interests should be directed into the field of Fourier analysis and the Riemann zeta function. ... [In an important paper in 1948] the main application of the general result yields a deep-seated connection between the distribution of the prime numbers and the location of the zeros of the Riemann zeta function on (or near to it if the Riemann hypothesis is false) the critical line in the complex plane... Guinand was convinced that these results could lead to more information about the Riemann zeta function, and he was disappointed that he was not able to advance further in this area and that others did not take up the possibility themselves.*

Guinand died March 22, 1987 in Peterborough, Ontario, Canada.

Article by: J J O'Connor and E F Robertson

Newton's law of cooling† (1701)

Named after its discoverer, the English mathematician and scientist Sir Isaac Newton (1642-1727), this states that when a body is losing heat under conditions of forced convection, the rate of loss of heat dQ/dt is proportional to the surface area A of the body and to the difference between the temperature T of the body and the temperature T_s of its surroundings.

Then,

$$dQ/dt = hA(T - T_s)$$

where h is a constant for a particular arrangement, now known as the heat transfer coefficient.

J Thewlis, ed., *Encyclopaedic Dictionary of Physics* (New York, Oxford and London, 1962) **Michael Sprackling**

†Reprinted with permission from *Dictionary of Theories*, by Jennifer Bothamley, VisibleInk, Detroit.

Cartoon Corner