# TCU Math News Letter

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*Geometry has two great treasures: One is the theorem of Pythagoras; the other, the division of a line into extreme and mean ratio. The first we may compare to the measure of gold; the second we may name a precious jewel.*

-- J. Kepler (1571 -1630)

Editor: Dr. Rhonda Hatcher and Archive of Newsletters

## Professor John Conway Visiting as a Green Honors Chair

Professor John Conway of Princeton University, a world famous mathematician, will be visiting TCU as a Green Honors Professor on Tuesday, March 3, through Thursday, March 5.

Professor Conway received his Ph.D. from Cambridge University. He went on to become a faculty member at Cambridge until 1986, when he moved to Princeton. He is a member of the prestigious Royal Society of London. Professor Conway has made major contributions to many branches of mathematics, but is perhaps best known to the general public for his invention of the Game of "Life" (not the board game). This game was brought to the attention of the general public when Martin Gardner featured it in his "Mathematical Games" column of *Scientific American*.

Professor Conway will give four talks during his visit to TCU. The first talk, "Triangular Tricks," will be on Tuesday, March 3, at 4 p.m. The second talk, "Adding Angles," will be at 4 p.m. on Wednesday, March 4. On Wednesday evening at 7:30 p.m., he will present a public lecture entitled "Tangles, Bangles, and Knots." His final talk, "The Fifteen Theorem," will be on Thursday, March 5, at 4:00 p.m. The afternoon talks will all be in Winton Scott Hall 145 and the Wednesday evening lecture will be in Sid Richardson, Lecture Hall 1.

## Two Mathematics Majors Invited to Join Phi Beta Kappa

The Mathematics Department is pleased to announce that two of our majors have recently been invited to join Phi Beta Kappa, the nation's oldest honor society. The honored students are seniors Aaron Heap and Laura Dunning, who is also majoring in computer science.

## Math Humor Over the Internet

The following list is an edited (so that it would get a G rating) version of a Top Ten list written by Kelly Krieble, and sent to Professor David Addis:

You Might Be A Math Teacher If:

10.You come home from work with a horizontal line of chalk dust across your back.

9. On those rare occasions when you eat out you never need a calculator to figure out 15 percent.

8. When stating telephone numbers, account numbers, or street addresses, you always say "zero" instead of "O".

7. You can average any three two-digit numbers instantly, without pencil, paper, or calculator.

6. When you see the word "sin" in print, spiritual matters never cross your mind.

5. When you and your colleagues attend conventions, you spend your spare time in restaurants drinking coffee and writing on napkins.

4. This one was cut by the censor board. Use your imagination.

3. You actually believe that someone can row 24 miles upstream in four hours and lighthouses are always located on straight shorelines.

2. When someone asks you what your opinion is of the Simpson Ruling and you say, "Well it works much better than the trapezoid method."

And finally the number one indication that you might be a math teacher:

1. Your spouse looks at what you are writing at your desk late at night and says, "You'd think that someone who understood all that would be making a decent salary!"

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## Solution to the February 1998 Problem of the Month

Problem: In a prison sits a prisoner who is sentenced to die. Fortunately the warden, an eccentric, offers the prisoner a chance to live. The warden gives the prisoner 12 black balls and 12 white balls. Next the warden gives the prisoner two boxes and tells the prisoner that tomorrow the executioner will draw one ball at random from one of the boxes. If a white ball is drawn, the prisoner will be freed; if a black ball is drawn the sentence will be carried out. How should the prisoner arrange the balls in the boxes so as to maximize his chance for freedom?

The prisoner should put one white ball in one box and the rest of the balls in the second box. The probability of going free is then

$$\frac{1}{2}\cdot 1+\frac{1}{2}\cdot\frac{11}{23}=\frac{17}{23}.$$

To see that this maximizes the prisoner's chance of freedom, note that if each box contains the same number of white balls and black balls, the probability of freedom is 1/2. On the other hand, the best the prisoner can do in a box with more white balls is freedom with probability 1. The best he can do for a box with fewer white balls is too get as close to half white as possible, i.e. 11 out of 23 balls. These optima occur simultaneously in the above allocation, hence the prisoner can do no better.

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# Problem of the Month

This month's problem appeared in the 1993 Konhauser Problemfest, a problem competition for several colleges in Minnesota. Find a second-degree polynomial with integer coefficients, $p(x) = ax^2 + bx + c$, such that $p(1)$, $p(2)$, $p(3)$, and $p(4)$ are perfect squares, but $p(5)$ is not.

**Students and others are invited to submit solutions to Dr. George Gilbert (Math Dept. Office or P.O. 298900). Correct solutions submitted by persons who are not members of the TCU math faculty will be acknowledged in the next issue of the newsletter. Note that a correct solution is an answer and a justification of its correctness. The solution to the problem will be published in the next edition of the newsletter.**

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**The TCU Math Newsletter will be published each month during the academic year. Dr. Hatcher: Editor; Dr. Gilbert: Problem Editor; Dr. Doran: Thought of the Month Editor. Items which you would like to have included should be sent to Dr. Hatcher (Math Dept. Office or P.O. 298900).**