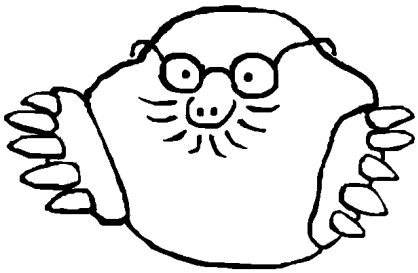

Math Mole

June 9, 2008 *Welcome to GSS:Math 2008!* Volume 1, No. 1

This issue

Quote: *Logic is invincible because in order to combat logic it is necessary to use logic.*

– Pierre Boutroux

Puzzles: Puzzle solutions are due at the beginning of class *two* class periods after they are published. Correct and justified solutions earn extra credit points. All decisions by the Mole Judge are final.

One: A Hershey's Chocolate Bar comes in a solid rectangle subdivided into a grid of 4 by 3 rectangles. Counting a 'break' as any time you take any solid piece and break it all the way through using a given subdividing line, what is the minimum number of breaks needed to completely divide a Hershey's bar into 12 pieces?

Two: Four prisoners are placed in a line so that #1 can not see the others, #2 can only see #1, #3 can see #2 and #1, and #4 can see all the others. The warden secretly places a hat on each prisoner and then makes the following announcement. "I have placed either a black hat or a white hat on each of your heads. There is at least one hat of each color. The first to correctly identify the color of the hat on their head will be set free."

If you were one of the prisoners, which one would you want to be and why?

Mathematician of the Day

Johann Carl Friedrich Gauss - Germany 1777-1855

- Gauss was a child genius. A famous story says that he was bothering his teachers so they asked him to sum up the integers from 1 to 100. He quickly figured out that the sum was 5050 (50 pairs adding to 101 each).
- As was typical of the times, after graduating, he served in various positions under the favor of whoever was in power. This gave him income and position, and most importantly, time to work on his mathematics.
- He worked in various areas of mathematics: number theory, numerical methods, algebra, geometry, etc. He sometimes did not publish his work, but later made claims that he had known some result many years before (sometimes even back to when he was a child!).
- He also worked in areas of physics, especially astronomy, becoming director of the Göttingen observatory in 1807.
- Gauss is considered one of the greatest mathematicians of all time (along with Archimedes and Newton)

Info From: `http://www-history.mcs.st-andrews.ac.uk/Mathematicians/Gauss.html`

Career Spotlight: University Math Professor

Education: Typically a Ph.D. in Mathematics (taking 4-7 years of graduate study)

Work Situation: University setting. Workload typically consists of teaching 6-8 hours a week in the classroom (for a research professor), grading and class preparation, some service or administrative duties, with the remainder of the time devoted to research. May spend 30-40 hours a week at the office, with another 10-20 hours of work at home. Most positions are for 9 months, so that the summers are available for extended research or extra teaching.

Pay: Starting salaries are around $60-70K, with top average salaries around $110K. Income can be supplemented by grants, writing books, extra teaching, consulting, etc.

Outlook: The annual production of Ph.D.s matches fairly will with the demand for Ph.D.'s at universities, research labs and other teaching positions. Although there is often talk of increased demand, that has not been the reality.

Other: Because graduate students are needed to teach, most often you would receive free tuition and a reasonable pay ($15K per year) as a graduate student. As a professor you have much freedom as to how you arrange your time and what and how you do your research. There are opportunities for travel to conferences both domestically and internationally.