



Math Mole

June 22, 2009

Happy Test Day!

Volume 3, No. 1

This issue

- Mathematician of the Day
- Quotes
- Puzzles
- Today's Editor: Hunter
- Tuesday: Pranav

Quotes:

Errors using inadequate data are much less than those using no data at all. – Charles Babbage

Pure mathematics is, in its way, the poetry of logical ideas. – Albert Einstein

Black holes result from God dividing the universe by zero. – Author Unknown

Puzzles:

Bridge Crossing: A group of four people has to cross a bridge. It is dark, and they have to light the path with a flashlight. No more than two people can cross the bridge simultaneously, and the group has only one flashlight. It takes different time for the people in the group to cross the bridge: Annie crosses the bridge in 1 minute, Bob crosses the bridge in 2 minutes, John crosses the bridge in 5 minutes, Dorothy crosses the bridge in 10 minutes.

How can the group cross in 17 minutes?

Light: There are three switches downstairs. Each corresponds to one of the three light bulbs in the attic. You can turn the switches on and off and leave them in any position. How would you identify which switch corresponds to which light bulb, if you are only allowed one trip upstairs?

Mathematician of the Day



Charles Babbage, England, -1871

- Charles Babbage is often called the "father of computing" for his detailed plans for mechanical Calculating Engines, both the table-making Difference Engines (1821) and the far more ambitious Analytical Engines (1837).
- In 1827, he published a table of logarithms from 1 to 108000. In the same year, Babbage's father, his wife Georgiana Babbage, and one son all died.
- Charles Babbage died October 18, 1871 in London, England.
- Unfortunately, little remains of Babbage's prototype computing machines. Critical tolerances required by his machines exceeded the level of technology available at the time. And, though Babbage's work was formally recognized by respected scientific institutions, the British government suspended funding for his Difference Engine in 1832.

Info From: ??

Mathematics Spotlight: Poincare's Conjecture and The (Only) Refused Fields Medal

Prior to its proof, Poincare's conjecture was one of the most celebrated problems in mathematics. It is one of the seven famous Millennium Prize Problems, and it remains the only one of the seven that has been solved. The conjecture deals with the characterization of the three-dimensional sphere among three-dimensional manifolds. Poincare first posed the conjecture in the form of a question in a paper he wrote in 1900. At the time, Poincare was working on some of the foundations of topology, a field of mathematics that deals with the investigation of the structure of space. To visualize the conjecture, imagine an ordinary sphere that has a rope tied around its middle. The rope can be tightened more and more as it slides up the sphere until it condenses into a single point, and this can be done without damaging the sphere in any way. This characterizes an ordinary sphere in 3 dimensional space, called a 2-sphere. Poincare wondered in his famous conjecture whether this same characteristic might also define a sphere in 4 dimensions, called a 3-sphere.

For years, mathematicians puzzled over how to prove the conjecture. In 1982, Richard Hamilton proposed using Ricci flow to "smooth out" a 3-manifold and use it to prove some special cases of the conjecture. (Besides math, Hamilton was interested in horseback riding, windsurfing, and women. Not all mathematicians are nerdy.) In 2003, using ideas from Hamilton's work, Russian mathematician Grigori Perelman sketched a proof of the conjecture and published it on the internet. The proof has since been verified, and in 2006, Perelman was awarded the Fields Medal for his accomplishment.

Perelman refused to accept the Medal, however, and he is the only recipient ever to reject the most coveted prize in mathematics. The eccentricities of Grigori Perelman are well known. In contrast to Richard Hamilton, Perelman could easily be considered nerdy. He lives with his mother in an apartment in St. Petersburg, Russia. Perelman's choice to publish his proof on the Internet reveals his apparent disdain for much of the mathematical community. When he outlined the proof of the Poincare, Perelman left certain logical gaps that were considered by most to be gaps in exposition only. Those gaps have since been filled, namely by two students of the Chinese mathematician, Shing-Tung Yau. Yau has contended that Hamilton solved about fifty percent of the problem, Perelman solved twenty five percent, and his (Yau's) students solved about thirty percent. Probably as a result, Perelman has lamented the lack of scruples by many in the mathematical community, and he has refused to accept many prizes, including the Fields. Today, Perelman has receded from the world of mathematics, and is thought to be jobless. The lesson, as always: you can enjoy math and be attractive to women, but it helps if you windsurf.

Sources:

http://en.wikipedia.org/wiki/Poincare%27s_Conjecture

http://en.wikipedia.org/wiki/Grigori_Perelman

http://en.wikipedia.org/wiki/Fields_Medal

http://www.newyorker.com/archive/2006/08/28/060828fa_fact2