ANTENNA

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Happy (belated) New Year,

The year has started, and is in fact well into it, being around mid February. Today we delve into some maths related areas. (Groan) No wait look first before you put it down and read the Mercury, I'm sure you will find something of Interest here.

Have a great 2004 – Peter T

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A calculated risk

Yesterday, at New York's Kennedy airport, an individual was arrested when he tried to board a flight while in possession of a ruler, a protractor, a set-square, a slide rule, and a calculator.

At a morning press conference, US Attorney General John Ashcroft said he believes the man is a member of the notorious Al Gebra movement. The FBI is charging him with carrying weapons of maths instruction.

"Al Gebra is a secret organization whose leader is believed to be a cosine of Osama Bin Laden," Ashcroft said. "There are several divisions and they are prepared to use a wide variety of means to achieve solutions. The members sometimes go off on tangents in search of absolute values. In addition, they use secret code names such as 'x' and 'y' and refer to themselves as 'unknowns', but we are positive that they belong to a common denominator known as the 'Axis of Even', with co-ordinates in many countries.

"As the Greek natural philanderer Isosceles used to say, there are three sides to every triangle," Ashcroft declared.

When asked to comment on the arrest, President Bush said: "If God had wanted us to have better weapons of maths instruction, He would have given us more fingers and toes.

"I am gratified that our government has given us a sine that it is intent on protracting us from those who are willing to disintegrate us with calculus disregard. Under the circumferences, and factoring in all the variables, I believe that we must maintain unity and draw the line, cos divided we fall."

President Bush also warned: "These weapons of maths instruction have the potential to decimal our society on a scalene never before seen, unless we become exponents of a Higher Power and rid the world of this entirely negative organization."

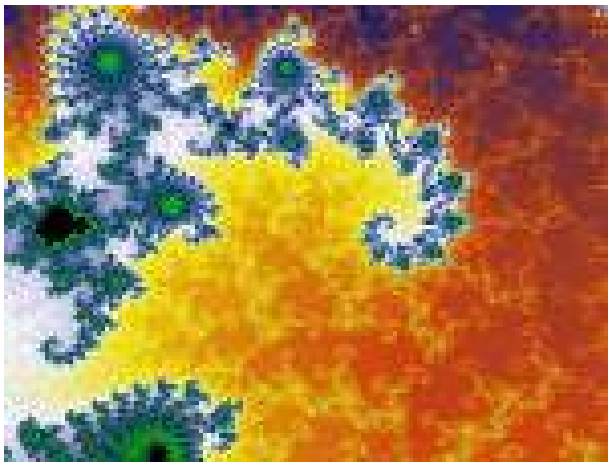
The President concluded: "Read my ellipse. Here is one principle we are not uncertainty of --though they continue to multiply, we are circling in ever closer, and their days are numbered as the hypotenuse tightens around their necks."

Submitted by R. P. of Adelaide

Fractals

Perhaps one of the best-known, or at least colorful uses for mathematics is the Mandelbrot set, imagined and created by Benoit Mandelbrot. It wasn't until computers that the calculations could be displayed to full effect, and as computers become more powerful, the depths one can delve into a set can become deeper and deeper. Although a set is in essence infinitely complex, the time taken at a deep level become prohibitive, until a faster computer is on the marketplace.

The Mandelbrot set, named after Benoit Mandelbrot, is a **fractal**. Fractals are objects that display self-similarity at various scales. Magnifying a fractal reveals small-scale details similar to the large-scale characteristics. Although the Mandelbrot set is self-similar at magnified scales, the small-scale details are not *identical* to the whole. In fact, the Mandelbrot set is infinitely complex. Yet the process of generating it is based on an extremely simple equation involving complex numbers.



To delve deeper into the Mandelbrot set have a look here: http://www.ddewey.net/mandelbrot/

Fun with Calculators

The number 3025 has an interesting quirk. Split it into 30 and 25, add them together and square the result. For those not sure what squaring the result is – multiplying a number by it's self – example the square of 5 is 25 being 5 x 5 = 25, the square of 9 is 81, the square of the puzzle above is – quirky to say the least.

Calculators can help with solving day -to-day problems:

- Type in 71077345 – now this number can help with the running of the engine. How? Well turn the calculator upside down.
- Lets say your doing 85 kph and your approaching a school. Divide 85 with 79.069767 – make it quick the school is not far away. Read it upside down again.
- Your dog is running amok what can you do? For advice type in 7334. Read upside down.
- Some may 376616 at these; others will think me a 83507, to those that think then I might say 77342.06.

Upcoming events

Science Week 2004 - 14th -- 22nd August 2004

Youth ANZAAS 2004 – Date and location soon

Your event – At your location and date

Links

ABC science lab
http://www.abc.net.au/science/
The ABC's science page full of great info for all.

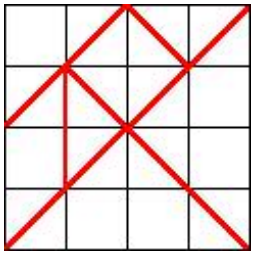
Brain Pop:
http://www.brainpop.com/
I found this one years ago, has great flash animations on many science subjects.

How Stuff Works:
http://www.howstuffworks.com/
I just love this one, fantastic resource, with easy to understand descriptions of how just about anyt hing works. An example is how do Alligators work? Or how Electromagnets work?

Tangrams

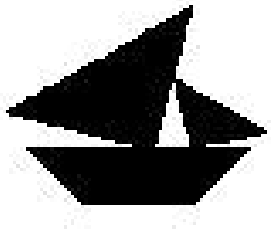
The origins of the tangram puzzle are not known with any certainty, but the idea is thought to have originated in China about 250 years ago. You need a set of tangram pieces to work on these puzzles.

To make a set, get a square piece of stiff card, 6 -8 cm square is a good size, lightly mark with a 4 x 4 grid, then mark as seen below and cut them out – you should have seven Tans (pieces) when finished.

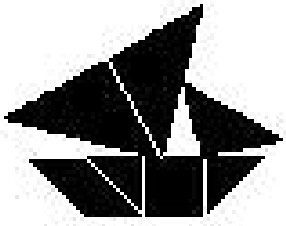


To play is simple really, which is one of its attractions. The classic rules are as follows: You must use all seven tans, they must lay flat, they must touch and none may overlap. Feel free to break away from the "rules", though.

Try this boat; can you do it without looking at the answer?



The boat



The answer to the boat

Try making some patterns yourself, and then see if friends and family can make your pattern.

For some more details on Tangrams
http://www.tangrams.ca/