January 1999
Regulars

Letters

From bouquets...

I wanted to thank you for creating a wonderful site for those of us who find it fun to spend an evening puzzling through maths problems! I just happened upon the site when I was discussing Fibonacci numbers with a not so mathematically inclined friend, who asked just what they were ever used for...

So I took a look on the web and to my surprise found this site. I am a former maths teacher at the secondary and college level, teaching in the US and UK. I wish this site had been available then. I will definitely refer all my teacher friends to your site... It is nice to see a quality site which doesn't blast one with advertisements and general trash.

Karen Chiarello

...to brickbats

Make it more interesting.

Thomas Matheson

Here at PASS Maths, we're very keen that our site should be an interesting and useful resource. If you have any suggestions about how we might make the site more interesting, please let us know!

Kepler's Conjecture

I enjoyed your article "Mathematical mysteries: Kepler's conjecture" and wanted to compliment you on the facts and ability to capture the reader's attention. Kepler's conjecture interested me so much that I have decided to continue his efforts and prove his conjecture. I have seen Hales' proof and am looking for any

further background or information. Any help will be greatly appreciated. Thankyou for your wonderful article and assistance.

Kim Watts

Thomas C. Hales himself has a site about Kepler's conjecture and his proof at http://www.math.lsa.umich.edu/~hales/countdown/; there are plenty of links to related material there which you may find useful.

Hailstones again...

I looked up your page on hailstone numbers (3x+1, Collatz).

I'm quite interested in this problem, and have done lengthy (i.e. many 1000's of hours on pentium 200+ MHZ in assembly) calculations on it. The results are online at http://personal.computrain.nl/eric/wondrous.

You might be interested in adding a link to this page.

Eric Roosendaal, Netherlands

Thanks, Eric; our readers know where to find you!

...and again!

I could not view the source code for your hailstone number generator *[Ed:*

Mathematical Mysteries, Issue 1] and was wondering if you could e−mail a text version of the code. I am interested in writing similar applications in C language and wanted to see how you accomplished this task.

John Eastwood, Tucson, Arizona

Here's a simple pseudocode algorithm for a hailstone sequence generator. Try implementing it in your favourite programming language!

```
function hail(integer n)
{
   print n              # INITIATING VALUE

   while (n != 1) {     # STOP WHEN WE HIT THE FIRST "1"

      if (isOdd(n)) {   # THE ODD CASE
         n = (n*3)+1
      }
      else {            # THE EVEN CASE
         n = n/2
      }
      print n
   }
}
```

Maths and Medics

I am a A level student interested in doing a degree in medicine. I really need to know if I can do it without Maths A Levels.

Bianca Daniel

This is a good question for your school careers department; they should know the level of maths required for different courses at different institutions.

A Passage From India

My son is studying in 5th standard in India. He is 10 years old. I want to know about this course. Whether there is any material available for his standard. He is good in maths.

D. Manchanda

Our own site is aimed at somewhat older students than your son. We'd recommend you have a look at the NRICH Site which provides maths−related material for a much wider age range and has lots of useful links as well!

Another youngster

Forgive me for writing to you, but I would like to have some advice.

My son, aged 10, is very bright at maths and enjoys it very much, he enjoys puzzles and working through papers. As he enjoys everything that is thrown at him I would like to give him more puzzles for him to work on. Not so hard that he stops enjoying it but just to further his knowledge.

Would you know how this can be done, any advice or help from organisations?

Bryan Avery

Letters from our readers are always welcome!

Again, the best resource we can offer is the NRICH project web site. Problems are published every month, along with good children's solutions as they come in. There is a primary site too (http://nrich.maths.org.uk/primary), which may be more suitable for your son. There is a good mix of closed 'find the answer' puzzles and more open ended investigations.

In addition, the "Ask a Mathematician" service at NRICH is a bulletin board where children can get responses from maths students at the university. Give it a try!

Calling PASS Maths!

What happened?

Where finished one of the best e − review of math in the www? I used it with my student in Turin. I teach in a "Liceo", high School, of the town.

Thank You for your very good work that I hope can continue. Excuse my English. Happy new Year!

Federico Peiretti, Turin, Italy

Happy New Year to you too, and thanks for your good wishes. Don't worry, PASS Maths is still very much alive and kicking!

Odds and evens

I am a primary school teacher searching to see if anyone can define an even number for me and then from that definition explain whether zero should be considered as an even number or not.

Fiona

Try this one....

An even number leaves a remainder of zero when divided by 2.

16 / 2 = 8 r 0, so 16 is even.

0 / 2 = 0 r 0, so 0 is even.

[0 **is** even, by the way!]

Squaring the circle, part I

`x^2 + y^2 = r^2` is the equation for a circle where r is the radius (^ denotes power). Increasing the powers by 2 (even numbers only), the graph of the equation becomes more like a square but never reaches a perfect square *[Ed: We're not quite sure what you mean here.]*.

Logically, a perfect square would consist of the largest power, infinity. But everyone tells me I'm wrong but haven't given proof. So tell me, is the following equation true or false for a square with length of side 2 units:

```
y^(infinity) + x^(infinity) − 1 = 0
```

James Foster

If we understand you correctly, we'd say false!

Try x = 1 and y = 1 in your equation. This is a point on the unit 2 square centred on the origin, but it is not a solution to your equation.

Also, we'd recommend you stick to finite numbers in equations. Try defining something like:−

```
f(n,x,y) = (y^(2n) + x^(2n))
```

where n is a positive integer and x, y are real. Then you can investigate the behaviour of f as n tends to infinity.

Squaring the circle, part II

In my previous letter i asked about `x^(infinity) + y^(infinity) − 1 = 0` being true for a square of length 2, i meant delta less than 2 (delta being the same as 1/(infinity)). But points (1,0)and (−1,0) still exist disproving it still.

Also, I didn't understand the part of the reply where it mentioned `f(n,x,y)=(y^(2n)+x^(2n))`, does this mean the function of n with respect to x and y?

James Foster

Now you've lost us! We suggest you find someone locally who can look at your working and help you explain where you might be going astray.

The `f(n,x,y)` notation simply means "a function named 'f' of the 3 variables n, x, and y".

Geometry questions

Hi, I was just wondering if you had a page on maths problems that I might have or if you could tell me the web−sites of any where that may be able to answer my question. The only sites I have been able to find answer maths questions up to high school level, yet I am an University student.

My question is simply to do with Euclidean Geometrical Constructions using straight edge and compasses only. I have been able to construct square roots using the following methods but I cannot find any more. Methods already used are 1)the 'Intersecting Chords' method, 2)the 'Secant−Tangent' method and 3) the 'Pythagoras' method.

Claire Turner

Have a look at the The Math Forum at Swarthmore College. They have some of college−level geometry material, as well as lists of related links and discussion forums.

Geometry in Action is another site you might like to take a look at.

Somewhere to ask for help would be the `alt.algebra.help` newsgroup.

How to contact us: Any comments?

Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.