



News

You've probably noticed, because people who read the maths newsletter tend to be quite observant, that it's recently stopped being 2016 and started being 2017. This is a good thing, as you know, because the number 2017 is a prime number and prime numbers are by far the most interesting numbers.¹ Not only is 2017 prime, but because it is one more than a multiple of 4, there is a theorem called 'Fermat's Two-Square Theorem' which says that these numbers can be written as the sum of two squares in one unique way. Can you work out which two squares add up to 2017?²



Maths Quote

"The meaning of these concepts I could not yet naturally grasp, but they acted on my imagination, instilling in me a reverence for mathematics as an exalted and mysterious science which opens up to its initiates a new world of wonders, inaccessible to ordinary mortals."³



Sophie Kovalevsky

Sophie Kovalevsky was the greatest female mathematician, prior to the 20th century. If you're not the greatest mathematician, but would like to be greater, you could always come along to maths workshop, any Monday lunchtime, in room 13.

1. The next prime numbered year will be 2027. When was the last one?
2. Both squares are less than 50², so it shouldn't take you too long to work out.
3. If that sounds quite complicated, be glad you weren't the person who had to translate it from the original Russian.
4. Or Sofia, or Sonya. Russian names seem to be quite complicated.

A Tricky Puzzle

Who ate all the pies?

Leibniz, Euler, Newton, and Fermat were sharing a plate of 12 mince pies.

Leibniz ate the first pie, and everyone saw him do this.

The pies then got passed around and eaten. At some point the plate got to Newton and there were no pies left.

Nobody had been paying attention to who had eaten how many (apart from Leibniz eating the first one). They could only remember how many pies they, themselves, had eaten.

Newton asked Leibniz, "Did you eat more than me?" Leibniz replied, "I don't know." Leibniz asked Euler, "Did you eat more than me?" Euler replied, "I don't know." Euler asked Fermat, "Did you eat more than me?" Fermat said, "I now know how many pies everyone ate!"

So how many pies did each person eat?

This puzzle was sent to us by Miss Puri, who you may remember from last year. So far, we don't know the solution.



Joke

"Doctor, doctor, whenever I see an x in an equation, I get really scared!"

"Don't worry. It's just a fear of the unknown."



Code Breaking



The Alan Turing Cryptography Competition.



Every year, the University of Manchester runs a competition called the Alan Turing Cryptography Competition, which they say is “aimed at secondary school children up to year 11.” We have recently been very successful in the Southampton University Cipher Challenge, which has been running throughout the autumn term – although we haven’t won the competition, our team led by Ellie Barrell and Emma Hillier, both currently in year 10, managed to break all of the codes that were set.

We are expecting this new competition to be quite a bit easier than the one run by Southampton University, because it’s specifically aimed at schools. There are also a lot more prizes on offer, which is always a good thing.

“The competition follows the story of two young cipher sleuths, Mike and Ellie, as they get caught up in a cryptographic adventure 'The Tale of the Mediaeval Manuscript'. Every week or two a new chapter of the story is released, each with a fiendish code to crack.”

If you would like to sign up and have a go, they are asking for teams of no more than four students.

The place to sign up is here:

http://www.maths.manchester.ac.uk/cryptography_competition/

The competition starts on Monday 23rd January, so register as soon as you can, and let us know how you get on.

Another Competition!

The Dame Kathleen Ollerenshaw



Do you like solving mind-bending mathematical brainteasers?
Can you and your friends untangle some fiendish puzzles?
Would you like the chance to use your mathematical skills to win some great prizes?
Then the MathsBombe is for you!

At least, that’s what the University of Manchester are saying on their website at the moment.

MathsBombe is a competition aimed at students up to year 13. This is what they say about it:

“Every two weeks a new puzzle set will be released. Each puzzle set contains two mathematical puzzles for you and your team to solve. The puzzles span the whole spectrum of mathematics: from fiendish logic puzzles in pure mathematics to applications of mathematics in real-world settings. You'll need to keep your wits about you and ‘think-outside-the-box’: complicated techniques from A-level or computer coding probably won't help you!”

Again, there seems to be quite a lot of prizes on offer, so it’s well worth thinking about having a go.

Register your team of up to four students here:

<http://www.maths.manchester.ac.uk/mathsbombe/>

The competition starts on Wednesday 18th January. Good luck!