King Edward VI Camp Hill School for Girls

Maths Department Newsletter

24th January 2018

Originally, 43 was the largest number that was not a Chicken McNugget number

News

Some of you might remember that just before Christmas we took part in the annual University of Southampton Cipher Challenge. We are very pleased to be able to tell you that, out of the literally thousands of teams who entered, we finished in 5th place. When I say 'we', of course I mean our code breaking team, Ellie Barrel and Emma Hillier, who are both in year 11. I'm sure you will agree that this is a brilliant achievement. Next year we are going to win!

Maths Quote

"Sometimes it is the people no one can imagine anything of who do the things no one can imagine."

Alan Turing

Alan Turing was a mathematician who, during the second world war, helped to break the codes used by the Nazis. The most famous of these codes was called Enigma. If you are interested In code breaking, Manchester University's Alan Turing Cryptography Competition is currently running.

Maths Words

At some point, during the 1980s, the mathematician Henri Picciotto was eating Chicken McNuggets with his son at McDonalds, when he noticed that every box contained either 6, 9 or 12 nuggets. Since there are no prime numbers that are factors of all three of these numbers, it means that any number can be made by adding together multiples of 6, 9 and 12; once we get beyond a few exceptions, the largest of which is 43. Every number greater than 43 is a 'Chicken McNugget number'. Since the 1980s, McDonalds have introduced different sized boxes of McNuggets and completely ruined all of this, which is, from a mathematical point of view, very disappointing. There are many different kinds of numbers that have been given names over the years[1], such as happy numbers, abundant numbers, perfect numbers, kissing numbers and evil numbers. Why not look some of them up and find out what they are?

Joke

Student: "Would you punish me for something I didn't do?"

Teacher: "Of course not!"

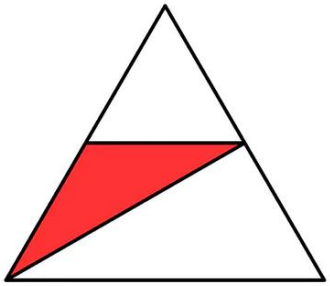
Student: "Well, I didn't do my maths homework."

1. Chicken McNugget numbers are a bit of a silly one.

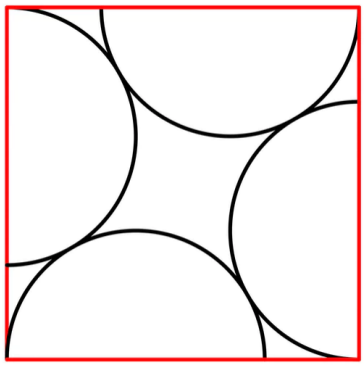
Maths Puzzles

Here are some puzzles from Alex Bellos.

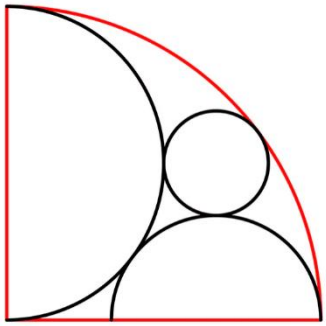
1. In this equilateral triangle, what fraction of the whole triangle is the red triangle?



2. Four semicircles with radius 2 are constructed in the red square below. What is the area of the square?



3. A quarter of a circle with radius 6 is shown below. Inside it are two semicircles and a circle, each of them at a tangent to the others. What are the radii of the black circle and the smaller black semicircle?



Full solutions to these puzzles can be found here:

https://www.theguardian.com/science/2017/dec/18/did-you-solve-it-feast-on-these-mathematical-snacks

Also Happening...

The Intermediate Maths Challenge is on Thursday 1st February. If you haven't been practising for this, and you want to, please come and get some past papers from the maths department.

Simon Singh's Parallel Project has started again this term. It's basically lots of maths puzzles. If you want to sign up, go to https://parallel.org.uk/ When you sign up, put in the teacher code fwgf1.

On Wednesday 7th February, 16 year 10 students will be going to the University of Birmingham to take part in their annual Big Maths Quiz. This is a competition that we won last year, and if we don't win it again we have to give the trophy back! Obviously, we would rather not have to do that.

Mathsbombe is also still running… if you can get home by 4 o'clock…

The University of Southampton Maths Challenge has also started. This is a great competition that we recommend you try. Even though over 1000 students enter, we have been very successful in it. Kujani from year 11 won first prize in the senior category two year ago[2], Kan in year 10 has also won first prize in the junior category, and we've had lots of runners up. It's aimed at students from years 7 to 10, so come and get a question sheet from the maths office, if you're interested in doing this.

2. Although the university forgot to tell us this until after the awards ceremony!