King Edward VI Camp Hill School for Girls

Maths Department Newsletter

19th September 2016

22/7 is approximately equal to π

News

As you may have heard, Miss Bodalia's baby, Joshva, was born on Saturday 3rd September. He weighed 5lb 12oz[1] and, according to Miss Bodalia, he is very cute. Hopefully she will bring him into school soon so you can all meet him. Meanwhile, in the maths department we have three new teachers this year, Mrs Sahota, Dr Gadd and Mr Ball, and the term seems to have got off to a good start. The University of Southampton's annual code breaking competition, 'The Cipher Challenge', is starting in a week or two. If you are interested in taking part in this, start by trying to crack the code on the back of this newsletter.[2]

Maths Club

Maths Club starts on Wednesday in Room 26 at 1 o'clock. Why not go along and join in? I know they have lots of fun things planned for this term.

Also, don't forget that if you're ever stuck with your maths homework, you're always welcome to come and get help at maths workshop, any Monday lunchtime, in Room 13 ☺

Maths Quote

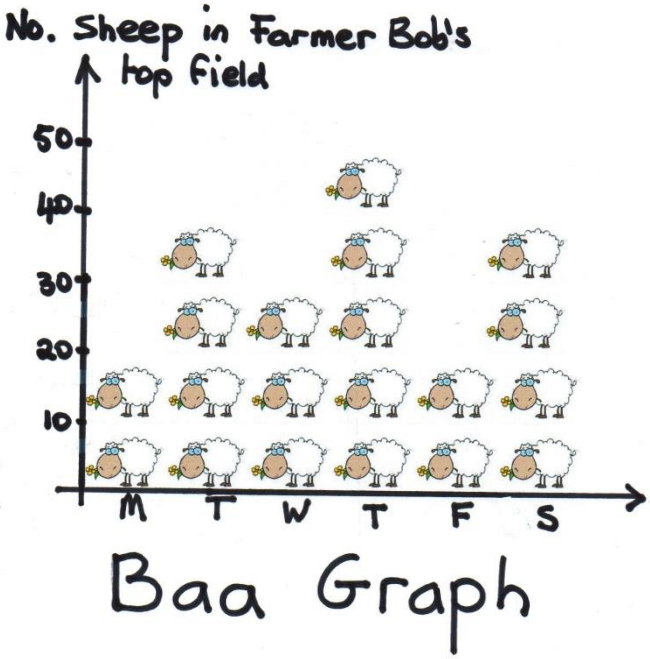
"Mathematics expresses values that reflect the cosmos, including orderliness, balance, harmony, logic, and abstract beauty." Deepak Chopra

Maths Word

A '**cipher**' is a type of code where each letter is replaced with a different letter, according to a set of rules. Some ciphers can be decoded by recognising that some letters are more common than others. This method is called 'frequency analysis'. You can then look for common words like 'the' or you can look for words that you expect to be in the text. The German Enigma code from World War II is probably the most famous cipher. Most of you by now will have seen the film 'The Imitation Game' which is all about how the mathematician Alan Turing and his team, working at Bletchley Park, broke the Enigma code and helped us win the war against Germany.

The Germans encoded messages with an Enigma machine like this.

Joke



1. Can you work out how many kilograms this is?
2. Hint: It's a substitution cipher, so it's crackable using frequency analysis.

Maths Puzzle

Sometimes we find that two fractions with a 1 in the numerator can be added to make another fraction with a 1 in the numerator, like this:

$$\frac{1}{3} + \frac{1}{6} = \frac{1}{2}$$

Can you find any other examples?

How many are there?

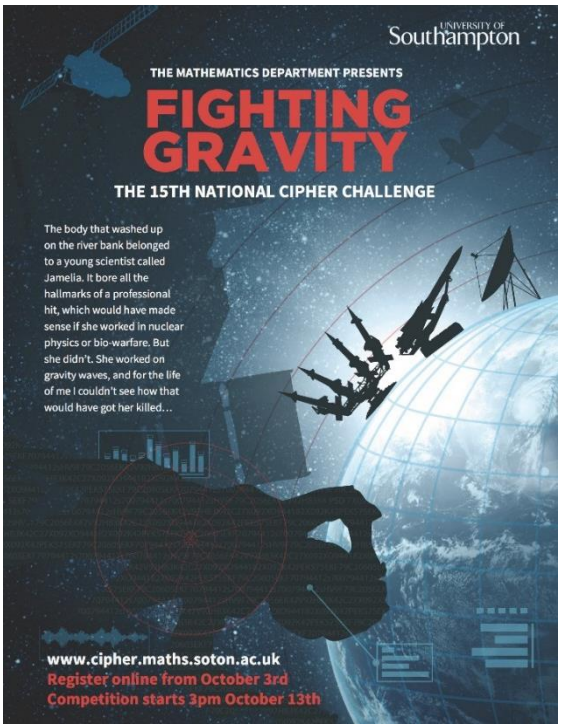
Can you find a way of making them?

And Another Puzzle

This historic number is the largest pandigital number you can make using Roman numerals ('pandigital' means it uses every possible digit). Can you work out what number it is? Also, what is the smallest pandigital number you can make with Roman numerals?

Thanks to Chris Smith @aap03102 for this puzzle ☺

Can you crack this code?



RH MPO MXGO MPO ZODM ZONQVOMMOW PFQ ROOZ NWXMMOZ, MPO YZXTOWQXMH KA QKYMPFGBMKZ NXVV PFTO VFYZIPOU XMQ FZZYFV IXBPOW IPFVVOZSO. XA HKY PFTO RKMPOWOU MK IWFIE MPXQ IKUO FZU WOFU MPXQ GOQQFSO, MPOZ NOVV UKZO! FQ KZO KA MPO ROQM IKUO RWOFEOWQ XZ MPO QIPKKV, NO NKYVU VXEO HKY MK RO KZ KYW KAAXIXFV IKUO RWOFEXZS MOFG. XA HKY NKYVU VXEO MK RO F BFWM KA MPO MOFG, MPOZ IKGO MK MPO GFMPQ UOBFWMGOZM FZU MOVV GW MFHVKW KW GW ROMMXQKZ FQ QKKZ FQ BKQQXRVO.