King Edward VI Camp Hill School for Girls

Maths Department Newsletter

13th February 2017

Euclid's 29th proposition is the first to depend on the parallel postulate

News

You've all probably heard the story about how the mathematician GH Hardy visited his friend, the mathematician Ramanujan, in hospital and how Hardy was asked what the number of the taxi was that he had travelled in, and how he said that it was 1729, which was not very interesting, and how Ramanujan said, "No, 1729 is a very interesting number. It is the smallest number expressible as the sum of two cubes in two different ways."[1] Have you heard that story? Anyway, on Wednesday 8th March, three teams of four year 10 students will be going to Birmingham University for a competition involving 100 teams from all over Birmingham. We've been told that one of the rounds is all about Ramanujan, so I'm sure this story will get a mention. We'll let you know how they get on.

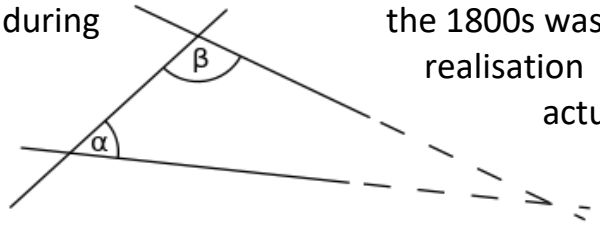
Did you know?

The Fibonacci sequence is encoded within the decimal expansion of 1/89.

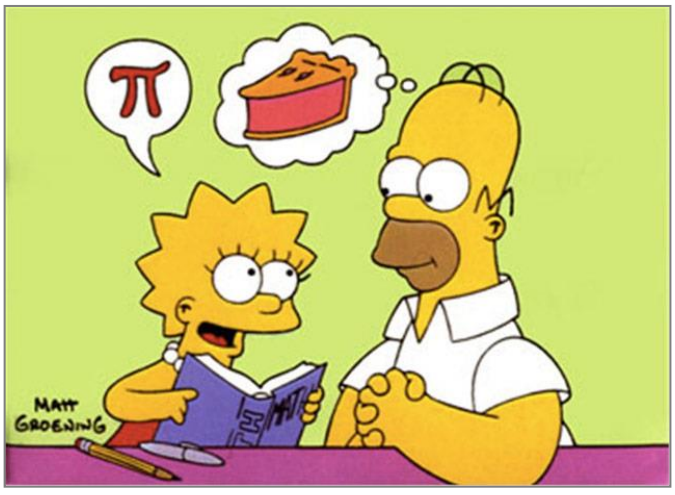
1/89
= 0.01 + 0.001
+ 0.0002 + 0.00003
+ 0.000005
+ 0.0000008
+ 0.00000013
+ 0.000000021 + 0.0000000034 etc.

Euclid

In his book, *The Elements*, the mathematician Euclid proved all of his theorems using five basic ideas, called 'postulates'. The fifth one, which is known as 'the parallel postulate' says that if, as in the diagram below, the sum of the interior angles α and β is less than 180°, then the two straight lines, if we make them infinitely long, will always meet at some point. One of the big advances in maths during the 1800s was the realisation that actually this is only true if you draw the lines on a flat surface. If you draw parallel lines on a curved surface, like a sphere for example, then it's not so simple. If this sounds interesting, just look up 'non-Euclidean geometry' on the internet.



Joke



1. I've borrowed the drawing of Hardy's taxi from https://listenwithothers.com/2015/07/31/taxi-by-ilver/ where it is accompanied by a ghost story.
In case you are wondering, $1729 = 1^3 + 12^3$ and $9^3 + 10^3$.

Competitions

The University of Southampton Maths Challenge has started, so get a copy of the question sheet from the maths department if you don't already have one. We have been very successful in this competition over the last few years, so it's definitely worth entering. Before Christmas, our year 10 girls Ellie Barrell and Emma Hillier's team came 35th in the Cipher Challenge[2], with the best team from the boys' school coming 41st.

Maths Quote

GO DOWN DEEP ENOUGH INTO ANYTHING AND YOU WILL FIND MATHEMATICS ~Dean Schlicter

Maths Workshop

If you're finding maths a bit difficult at the moment (like the girl in the picture below), there has been a slight change to the way we are running maths workshop.

Monday is now mainly for years 10 and 11, and Thursday is mainly for years 12 and 13.

Of course, students are always welcome to come up to the department at any time to get help with any problems they might have (particularly mathematical ones).

Puzzles

This is called a 'cryptarithm'. Each letter represents a number from 0 to 9. Can you solve it?

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    O N E
  N I N E +
T W E N T Y
  F I F T Y
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E I G H T Y
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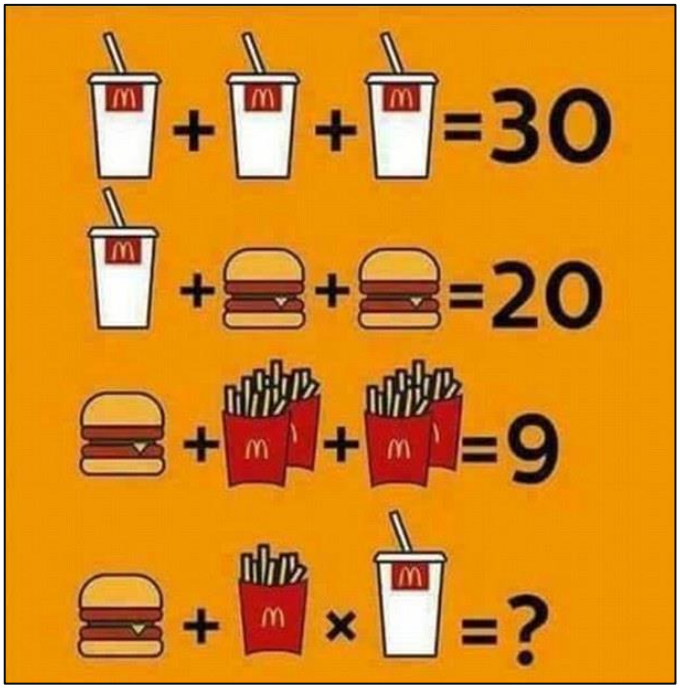
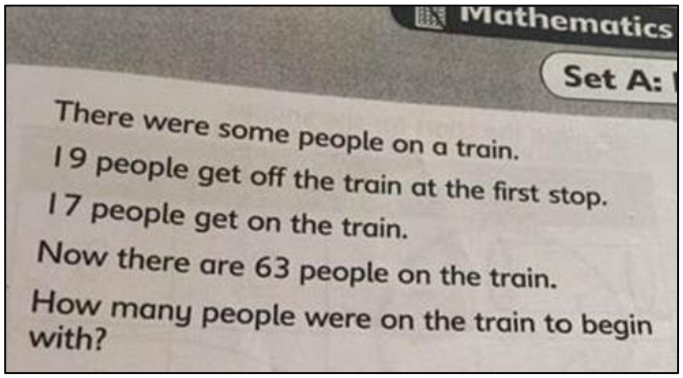
Here's another puzzle that's been confusing people on the internet.
What should the final row total be?



And this final one became well-known because it appeared on a SATs paper for year 2 students.



2. Out of several hundred teams, so it's a pretty good result.