King Edward VI Camp Hill School for Girls

Maths Department Newsletter

1st February 2016

A number is divisible by 9 if the sum of its digits is divisible by 9

News

There have been quite a few new things since the last newsletter, so I'll give them all their own separate headings…

A New Prime Number

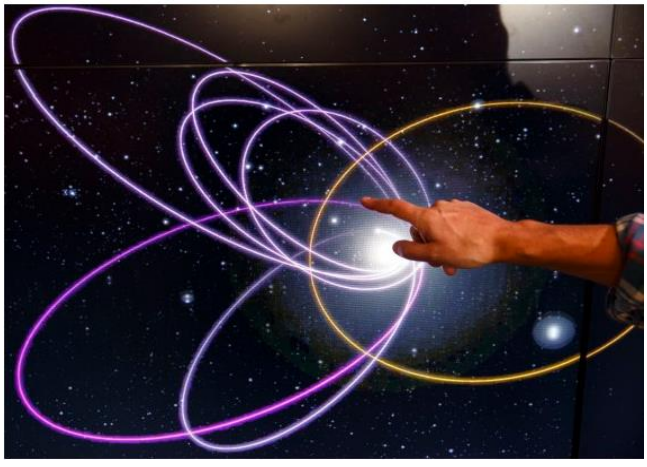
On 20th January a new prime number was found by Professor Curtis Cooper at the University of Central Missouri in the USA. He won a $3000 prize for discovering that

$$2^{74207281} - 1$$

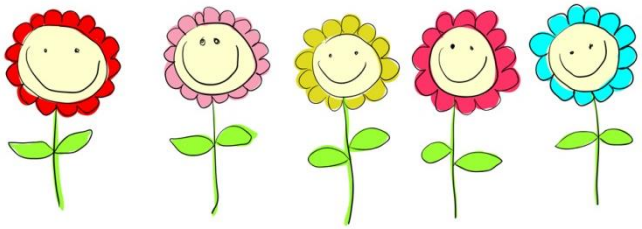
is a prime number. Written out in full the number is 22,338,618 digits long and it now holds the record for being the largest prime number ever discovered.

A New Planet

The announcement last week of the possibility of a new planet in our solar system was based entirely on a mathematical model. Nobody has seen it, but the maths suggests it's there. At the moment, it's being called 'Planet 9' or sometimes 'Planet X', which is really confusing, if you're a Roman.



A New Competition



If you're in year 7, make sure you have a go a Mr. Bettison's new maths puzzle about a family of flowers. The question sheets are on the window sill[1], and the deadline for handing in your solution is Thursday 11th February. If you're not in year 7 but would still like to have a go at it, feel free to do so. Put your solution in the box with the others. You may still get some house points, even though you won't be eligible for a prize.

Maths Word

'Algebra' is the study of mathematical symbols and the rules for manipulating them. The word comes from the Arabic 'al-jabr' meaning 'restoration' which appeared in the title of a book called *Ilm al-jabr wa'l-muḳābala* written by a mathematician named Muḥammad ibn Mūsā al-Khwārizmī around the year 820AD.

Joke

There are only 10 types of people. Those who understand binary and those who don't.

1. This seems like a sensible place to put flowers.

Rainbows

Some of you may have seen the rainbow after school on Tuesday 12th January. This is a photo of it we took from the car park behind school. Rainbows are circular in shape, but to see the whole circle, the weather needs to be just right and you also need to be very high up. Rainbows are not actual objects and cannot be physically approached. They are usually drawn as having 7 colours because this is how Isaac Newton described them in 1666. Many people remember the 7 colours (red, orange, yellow, green, blue, indigo, violet) using the mnemonic 'Richard of York gave battle in vain'. Newton divided the visible spectrum into seven colours because he believed there was a connection between the colours of the rainbow, the 7 notes in a musical scale, the 7 known objects in the Solar System, and the 7 days of the week.[2] The idea that the number 7 rules the universe goes back as far as Pythagoras.

Maths Quote

"Mathematics is the most beautiful and most powerful creation of the human spirit." Stefan Banach

If, however, it doesn't seem that way to you at the moment because you're struggling with something, why not come to Maths Workshop?
(every Friday lunchtime in room 13)

Prime Facts

To celebrate the discovery of the new prime number, here are our top ten important facts about prime numbers that we think you should know:

1. 1 is not a prime number.
2. 2 is the only even prime number.
3. Prime numbers only have two factors; namely 1 and the number itself.
4. There are an infinite number of prime numbers.
5. Every positive integer can be made by multiplying prime numbers together in one unique way.[3]
6. All prime numbers greater than 3 are next to a multiple of 6.
7. There are 25 prime numbers between 1 and 100.
8. You can make any even number by adding together 2 prime numbers.[4]
9. Internet security works by using really big prime numbers.
10. There are the same amount of prime numbers as there are integers.[5]

Leonardo's Solutions

The puzzle last time was quite hard. The trick was to subtract one number from another and then factorise the result. You would then find that: 112653² = 805 × 1399 + 337, 8775¹0 = 627 × 1399 + 337, and 618695 = 442 × 1399 + 337 making the integer 1399 and the remainder 337. If this still doesn't make sense, please ask your maths teacher, who I'm sure will be happy to explain it to you.

2. If you have ever had a problem choosing which crayons to use for the 'blue, indigo, violet' part, this is why.
3. Apart from 1, that is. This is the reason why 1 is not prime. If 1 was prime, this would not be true.
4. Even numbers greater than 2, that is. This is Goldbach's Conjecture. It's probably true, but we have no idea why.
5. Ask your maths teacher if you think this sounds weird. I'm sure they'd love to talk to you about this.