King Edward VI Camp Hill School for Girls

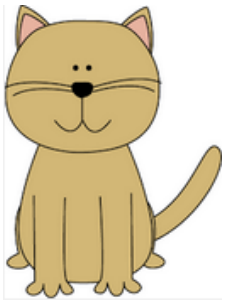
Maths Department Newsletter

29th February 2016

11 is the only palindromic prime with an even number of digits

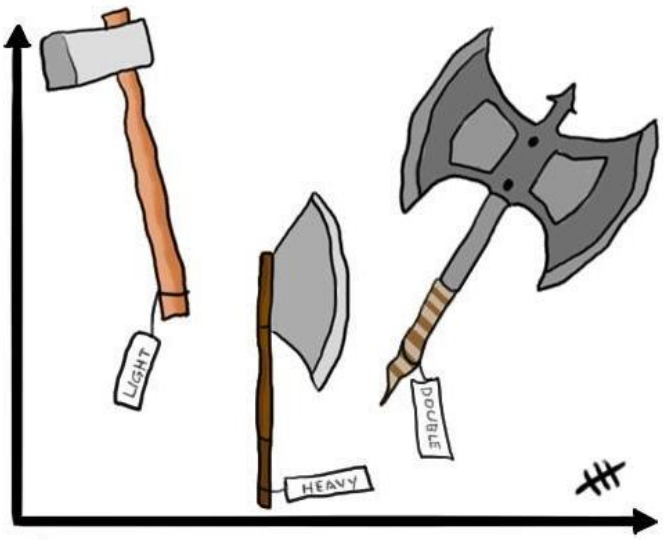
News

You may not know this but a person who is born on the 29th February is called a 'leapling'. These people only have a birthday once every 4 years[1], which means they will be well into retirement before they can officially celebrate their 18th birthday. This is a little bit like cats. To convert a cat's age into an equivalent human age, their first year of life counts as 15 years, their second year counts as 10 years, and every year after that counts as 4 years. This means that my 16 year old cat is really 15 + 10 + (14 × 4) = 81 years old. However, if a cat is born on the 29th February, the formula is rather more complicated. Can you work it out?



Joke

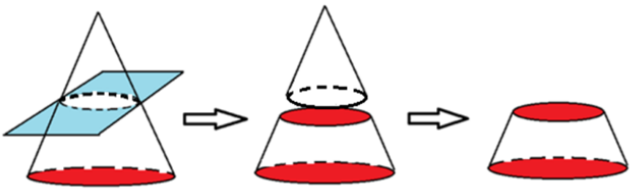
Always label your axes



Like some of these axes, this joke has a serious point to it.

Maths Word

A 'frustum' is what you get if you slice off the top of a cone or a pyramid.



a plane cuts the cone — splitting it into two — leaving a frustum

Sometimes you might see it spelt as 'frustrum'[2] but this is a mistake. Frustum is a Latin word meaning 'piece', whereas 'frustrum' is the Latin word from which we get the word 'frustrating'. The fact that teachers get frustrated by the amount of times people make this error is just a strange coincidence.

Maths Quote

"It is not knowledge, but the act of learning, not possession but the act of getting there, which grants the greatest enjoyment."

Carl Friedrich Gauss

If, however, you don't seem to be getting there as quickly as you would like, why not come along to maths workshop, which takes place every Friday lunchtime in room 13 ☺

Competition

Don't forget, if you're going to enter the University of Southampton Maths Challenge, to hand your work in to Mr. Bettison as soon as possible. He will be sending it all off on Monday 14th March.

1. If you ever have children, try to have them on 29th February. You'll save a fortune only having to buy birthday presents every 4 years.
2. This has even been spotted in some maths textbooks!

Extreme BIDMAS

Near the beginning of this year, we saw this, during our daily check of the internet looking for maths things we've not seen before:

$$2016$$

$$= (4+4)\times(4^4-4)$$

$$= 5+\frac{(5+5)^{5-\frac{5}{5}}+55}{5}$$

$$= 7+7\times\left[7\times(7\times7-7)-7\right]$$

$$= \frac{8\times8\times(8\times8\times8-8)}{8+8}$$

We wondered how difficult it was to construct this sort of thing. After a minute or two we came up with this:

$$3\times3^{3+3}-\left(33\times(3+3)-3^3\right)$$

$$= 2016.$$

and we decided that, even though it looks quite tricky, perhaps it isn't that difficult after all.

So what we want to know is, can you make 2016 using only the digits 1, 6 or 9, and using the digit no more than 10 times in your calculation?

Let us know if you can and we'll put the best ones in the next newsletter.

Famous Mathematician

Hypatia of Alexandria was a Greek mathematician and astronomer, who lived in Egypt, then a part of the Roman Empire, between about 360 and 415 AD. Unfortunately for her, the early fifth century was a time of major political and religious upheaval. Barbarians threatened the Roman Empire and sacked Rome itself in 410 AD, sending shock waves[3] around the Mediterranean. In antiquity, there were four branches of mathematics: arithmetic, geometry, astronomy and music. The first two were classed as 'pure' and the second two 'applied'. Hypatia worked in the first three, studying and teaching both arithmetic and geometry. Sadly, Hypatia was horribly murdered after getting caught up in a feud between Orestes, the Governor of Alexandria and Cyril, the Bishop of Alexandria. She is still remembered, however, for being the first ever famous female mathematician.

If you want to find out more about her, you could watch the film *Agora*[4], which is about her life and death.[5]

Competition Winner

The year 7 competition about the family of flowers was won by Maleeha Ahmad from 7W. As always, if you have anything interesting that you think should go in the next newsletter, please let us know.

3. Not literal ones; metaphorical ones.
4. Hypatia would teach in an 'agora'; an open space used for public assemblies and markets in Ancient Greece.
5. Although one student, after we watched some of it in class, was heard to say, "What on earth was that? That was the weirdest film I've ever seen!" (but don't let that put you off – they were probably just agoraphobic)