# FERMAT

1601 - 1665

Many say that Pierre de Fermat was the greatest mathematician of the seventeenth century. This is a particularly surprising claim as he was actually a town councillor in Toulouse and just did Maths as a hobby. Pierre was born in France in 1601. Yes, it seems that France was churning out mathematicians at quite a rate during this time. Unfortunately, unlike so many other Frenchmen of the seventeenth century, he avoided arguments. As a result there is not very much entertaining information about Fermat. We must however include him in our list, as some of his work was quite outstanding.

Firstly, Fermat named some numbers after himself. This is not an uncommon thing for great mathematicians to do. Newton named units after himself and Pascal named a triangle after himself, but Fermat… he chose numbers! In particular, he chose numbers of the form 2^2^*n* + 1. Now, I realise that these might not sound like very exciting numbers – indeed the second one is 17 – but if it wasn’t for Pierre choosing to look at these numbers, Gauss would never have become a mathematician. (It’s something to do with his 17-sided polygon if you’re wondering.) Incidentally, Gauss named a probability distribution after himself.

And then there was Fermat’s Little Theorem: an odd name as it’s not really that small and the implications are huge. Never mind all the details; suffice to say that it involves prime numbers, and without it we wouldn’t have the encryption that today allows credit cards, email and Internet services to be safe. And Fermat invented this area of mathematics 350 years ago having no idea of its importance.

And finally, there is Fermat’s (very famous) Last Theorem. Remember Pythagoras and his Theorem? It goes something like this: *x*2 + *y*2 = *z*2. Well Fermat reckoned that it was totally impossible to come up with any other number such that this is true. In other words, *xn* + *yn* = *zn* only works when *n* = 2. In typical Fermat fashion he didn’t write down his proof. In fact he wrote this;

‘*I have discovered a truly marvellous demonstration of this theorem, which this margin is too narrow to contain.*’

Unfortunately, Fermat died before anyone discovered that he had written this, so no one ever asked him what the proof was. And for 350 years no one could come up with any proof at all. It became the most famous unsolved maths problem in the world.

However, in 1995 an Englishman called Andrew Wiles came up with a solution that filled a mere 130 pages. When he handed it in for checking someone found a mistake. Over the next few months Andrew corrected the error and the Theorem was finally proved. Today there is even a best-selling book about the story written by Simon Singh.