Leonardo de Pisa (c. 1170 – 1240) was an Italian mathematician with the catchy nickname of 'Fibonacci'. He is best known for his great book, 'Liber Abaci'. It was published in 1202, and was really just a big book of mathematical ideas and puzzles. In this book Fibonacci wrote the poem '*As I was going to St. Ives, I met a man with seven wives.*..' (except he used Rome instead of St Ives, so it didn't rhyme). Another one of his puzzles has such an incredible answer that everyone should know about it. It goes something like this:

‘*If you put a male and a female rabbit in an enclosed space, how many rabbits will you have at the end of a year?*’

As you can see, even in 1202, rabbits had something of a proliferation reputation. It turns out that the number of pairs of rabbits at the end of each month is represented by the sequence:

1, 1, 2, 3, 5, 8, 13, 21, 34, ...

*Problem 1*

* Write in words the rule for finding the next number in the sequence.

*Problem 2*

* If this sequence continues, how many pairs of rabbits will there be at the end of twelve months?



The Male Bee: A male bee has only one parent! Why?

A female bee produces many eggs. If an egg is fertilised, then it grows into a female. So a female bee has a mother and a father – as we do. But any unfertilised eggs grow to be male. So a male bee has one parent – that would be a mother then.

*Problem 3*

* Use this fact to draw a family tree for a male bee. You must ignore brothers and sisters. Consider only parents, grandparents and so on. Write down the number of bees in each generation. What do you notice about these numbers?

**Further ideas**

* Research the connection between these Fibonacci numbers and daisies, pineapples and sunflowers (and more…)
* Find out more about Fibonacci and prepare a presentation to the class
* Find out the connection between the Fibonacci numbers and the golden ratio
* Construct a golden spiral