MATH 1070: Week 9 Mini-talk

Tasks

Your tasks in the Week 9 mini-talk on Friday are as follows.

- As the **speaker**: Introduce the topic to your audience (partner). Elaborate on one or more interesting facts from the list below. You will be presenting your mini-talk at a whiteboard, so choosing a fact that requires a diagram or some working out would be a good idea!
- As the **audience**: Listen carefully and ask a question of your partner. For example, it might be a clarifying question about the topic (e.g., 'what did you mean by ...?') or a question related to the speaker (e.g., 'what did you find most interesting about the topic?').

Fibonacci Numbers

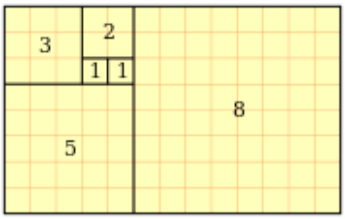
The **Fibonacci Sequence** is the sequence of numbers:

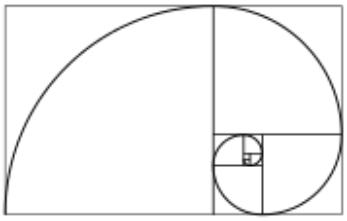
$$0, 1, 1, 2, 3, 5, 8, 13, 21, 34, \ldots$$

The next number is found by adding together the two numbers before it.

There are **lots** of interesting facts to tell your partner about. Some ideas:

- Where the name comes from; when the Fibonacci numbers were discovered (it was much earlier than the time of Leonardo Bonacci).
- Where Fibonacci numbers are found in nature, and some examples.
- Fibonacci numbers and shell spirals, in which we start with two squares of side length 1, and successively tile with squares whose side lengths are Fibonacci numbers.





Please turn over ...

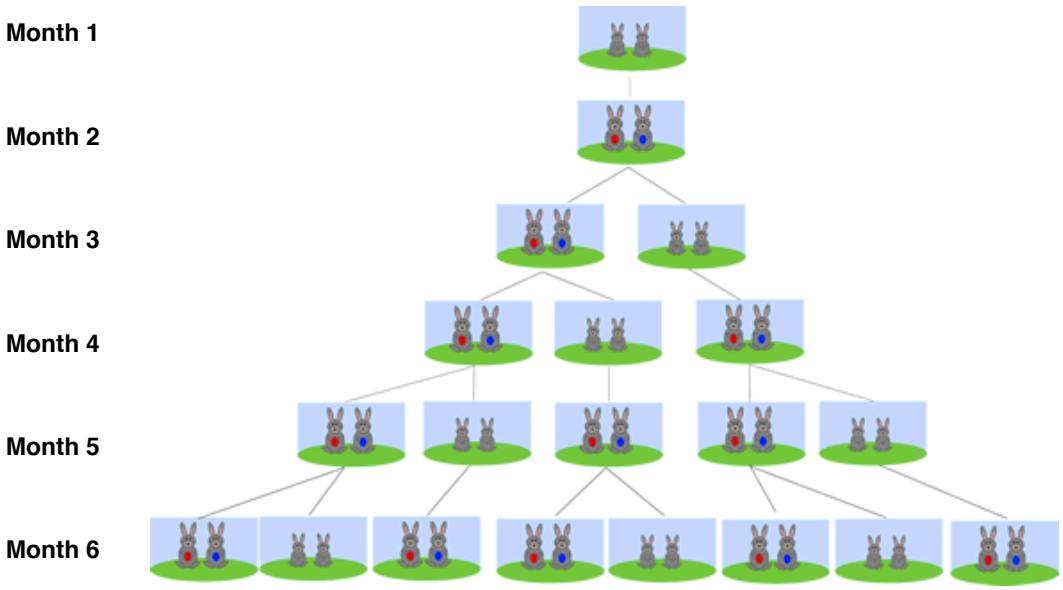
- what happens when we divide successive Fibonacci numbers (find out the name):

$$\frac{1}{1} = 1, \quad \frac{2}{1} = 2, \quad \frac{3}{2} = 1.5, \quad \frac{5}{3} = 1.\bar{6}, \quad \frac{8}{5} = 1.6, \quad \frac{13}{8} = 1.625, \quad \ldots$$

- *Fibonacci's Rabbits*, which is the original problem that Fibonacci investigated.

> Suppose a newly-born pair of rabbits, one male, one female, are put in a field. Rabbits are able to mate at the age of one month so that at the end of its second month a female can produce another pair of rabbits. Suppose that our rabbits never die and that the female always produces one new pair (one male, one female) every month from the second month on. How many pairs will there be at the start of each month?

(In your talk you could reproduce and explain a diagram like this one.)



Some useful websites are:

- http://www.mathsisfun.com/numbers/fibonacci-sequence.html
- http://www.maths.surrey.ac.uk/hosted-sites/R.Knott/Fibonacci/fib.html