Fibonacci Numbers and Golden Ratio

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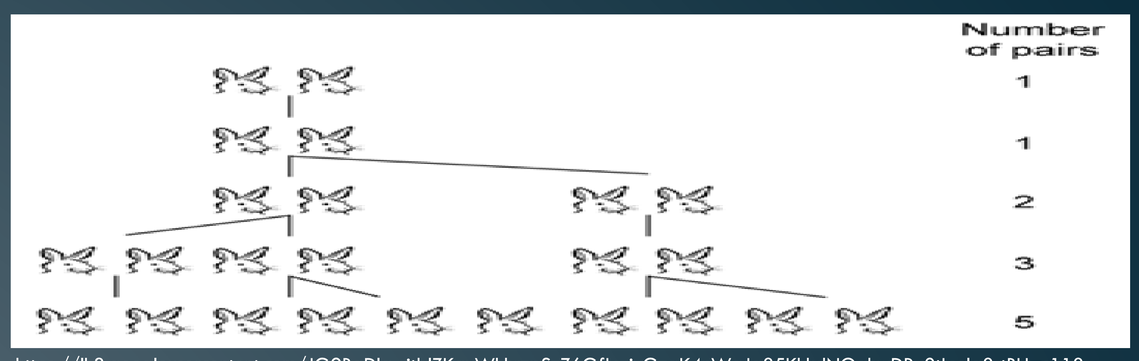
0 1 1 2 3 5 8 13 21 34 .....

GENERAL FORMULA : $F_{n+2} = F_{n+1} + F_n$

This series was developed by
"LEONARDO PISANO"
also known as "FIBONACCI"

The first two numbers in the Fibonacci sequence are either 1 and 1 or in modern usage 0 and 1.

- Fibonacci applied his sequence to a problem involving the breeding of rabbits
- He mapped out the family tree of a group of rabbits that initially started with only two members
- The number of rabbits at any given time was always a Fibonacci number



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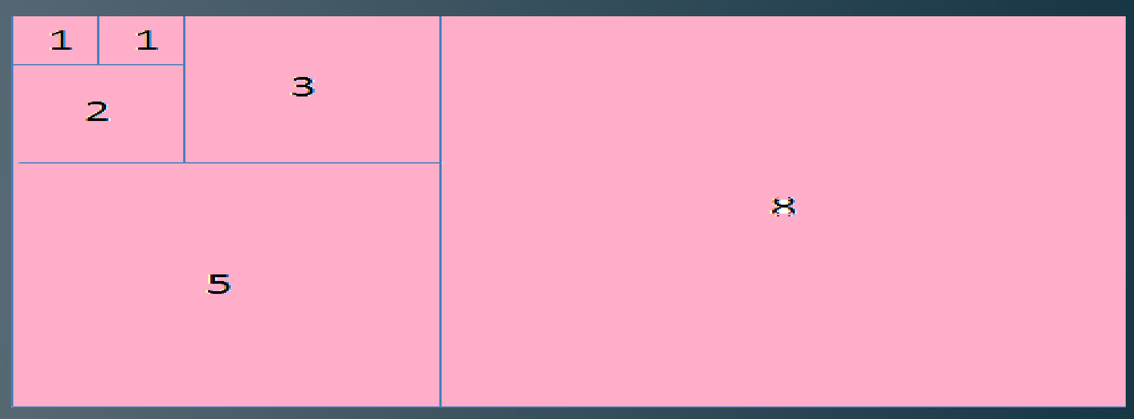
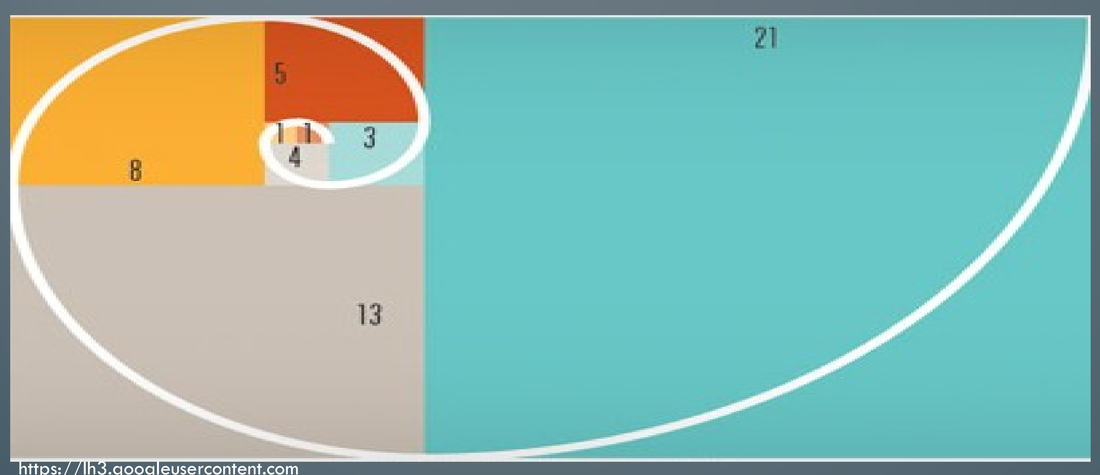
- "JOHANNES KELPER" observed that the ratio of consecutive Fibonacci numbers converges
- He wrote that as "5:8 so is 8:13", practically and as 8:13,so is "13:21 almost"
- He concluded that the limit approaches the beautiful number known as "GOLDEN RATIO"

- A rectangle whose sides are in the golden ratio is referred to as a "GOLDEN RECTANGLE".
- When a golden rectangle is squared, the remaining area forms another golden rectangle.
- Area of the rectangle=$1^2+1^2+2^2+3^2+5^2+8^2=8*(5+8)$





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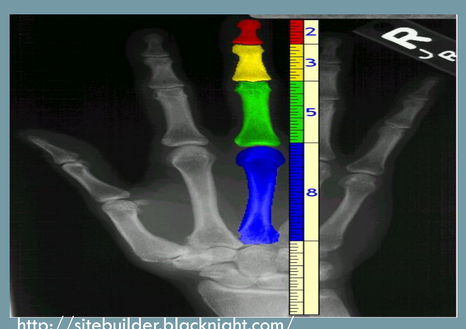
- A golden spiral is a spiral whose growth factor is φ, the golden ratio.
- That is, a golden spiral gets wider (or further from its origin) by a factor of φ for every quarter turn it makes.

Nature also uses Fibonacci Series and Golden Ratio in its designs



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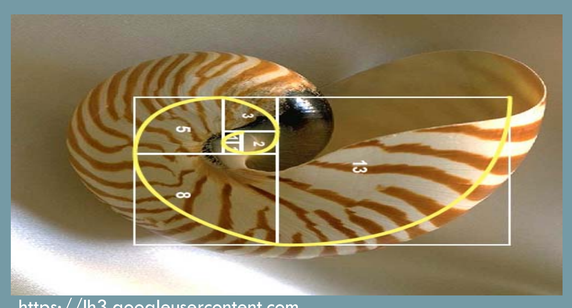
Each section of index figure, from the tip to the base of the wrist is larger than the preceding one by about Fibonacci numbers.



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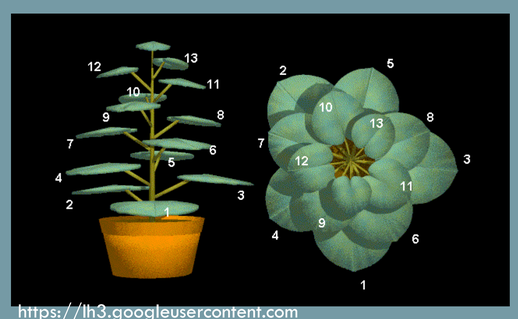
Snail shells follow golden spiral



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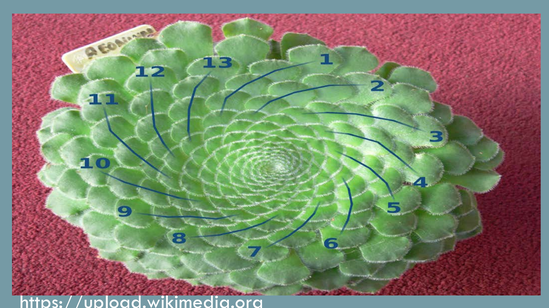
Leaves and branching of plants always branch off into groups of Fibonacci Numbers



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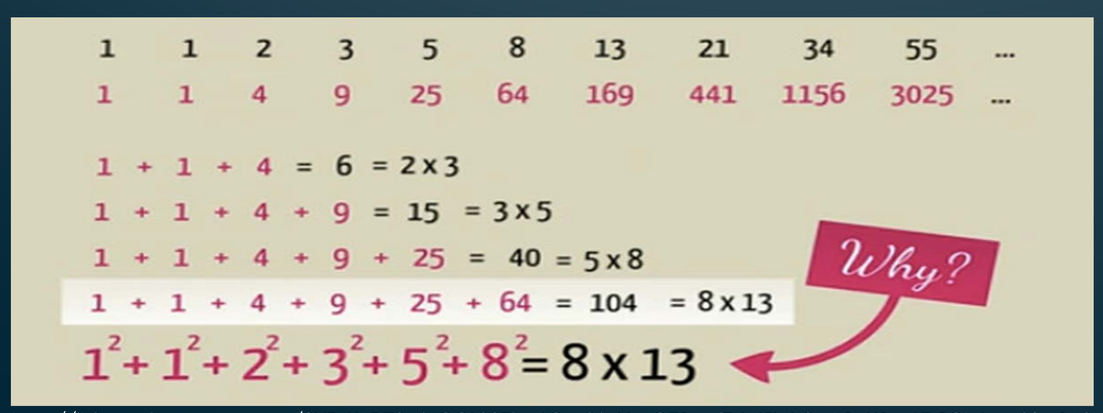
The head of a flower is also subject to Fibonacci Processes. It has 13 spirals..



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Interesting fact about Fibonacci Series:

In Fibonacci series, if we consider the square of each term then we find a very interesting result, that is-
The sum of squares of n consecutive terms is equal to the product of n^{th} and $(n+1)^{th}$ term.