Fibonacci Sequence And Number

Let’s see the following numbers

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377...

Can you see the magic or relation between the numbers...?

Now let’s see the actual relation between these Numbers...

The above series is a series of whole numbers in which each number is the sum of the two preceding numbers. Beginning with 0 and 1, in the sequence of numbers 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, etc.

These numbers are invented by the great Mathematician Leonardo de Fibonacci.

so now just see the magic of the Fibonacci numbers.........
Fibonacci Numbers -

The Fibonacci Sequence is the series of numbers:

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

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

• The 2 is found by adding the two numbers before it (1+1)
• Similarly, the 3 is found by adding the two numbers before it (1+2),
• And the 5 is (2+3),
• and so on!

Example: the next number in the sequence above would be 21+34 = 55

It is that simple!

Here is a longer list:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181, 6765, 10946, 17711, 28657, 46368, 75025, 121393, 196418, 317811,....
FIBONACCI NUMBERS IN NATURE

THE FIBONACCI NUMBERS ARE FOUND MANY PLACES IN THE NATURAL WORLD, INCLUDING:

1. The number of flower petals.
2. The branching behavior of plants.
3. Bees family.
4. Reproduction in rabbits.
IN FLOWER PETALS-

Try to observe Fibonacci sequence in the following flowers....

First, we would find that the number of petals on a flower is often one of the Fibonacci numbers. **One-petalled ...**

![white calla lily](image)

1+1=2  **Two-petalled**

![euphorbia](image)

1+2=3  **Three petalled**

![trillium](image)
2+3=5  Five petalled

3+5=8  Eight-petalled

8+5=13  Thirteen petalled

*black-eyed susan*
2. The branching behavior of plants.

Here we have a schematic diagram of a simple plant, the sneezewort

If we draw horizontal lines through the axils, we can detect obvious stages of development in the plant. It is not surprising then that the number of branches at any stage of development is a Fibonacci number.
3. Bees family.

There are many unusual features of honeybees and in this section we will show how the Fibonacci numbers count a honeybee's ancestors.

First, some unusual facts about honeybees such as: not all of them have two parents!

In a colony of honeybees there is one special female called the queen. There are many worker bees who are female too but unlike the queen bee, they produce no eggs. There are some drone bees who are male and do no work. Males are produced by the queen's unfertilised eggs, so male bees only have a mother but no father!

All the females are produced when the queen has mated with a male and so have two parents. Females usually end up as worker bees.

So female bees have 2 parents, a male and a female whereas male bees have just one parent, a female.

Queens have 2 parents
Males have 1 parent
Let's look at the family tree of a male drone bee.
3. REPRODUCTION IN RABBITS

This introduces you to the Fibonacci Number series and the simple definition of the whole never-ending series.

The puzzle that Fibonacci posed was...

How many pairs will there be in one year?

- At the end of the first month, they mate, but there is still one only 1 pair.

- At the end of the second month the female produces a new pair, so now there are 2 pairs of rabbits in the field.

- At the end of the third month, the original female produces a second pair, making 3 pairs in all in the field.

- At the end of the fourth month, the original female has produced yet another new pair, the female born two months ago produces her first pair also, making 5 pairs.

CONCLUSION: The number of pairs of rabbits in the field at the start of each month is 1, 1, 2, 3, 5, 8, 13, 21, 34, ...
January

February

March

April

Table 2.6

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<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
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<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>13</td>
<td>21</td>
<td>34</td>
<td>55</td>
<td>89</td>
<td>144</td>
<td>233</td>
</tr>
<tr>
<td>Pairs of babies</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>8</td>
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<td>21</td>
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<tr>
<td>Total pairs</td>
<td>1</td>
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<td>3</td>
<td>5</td>
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