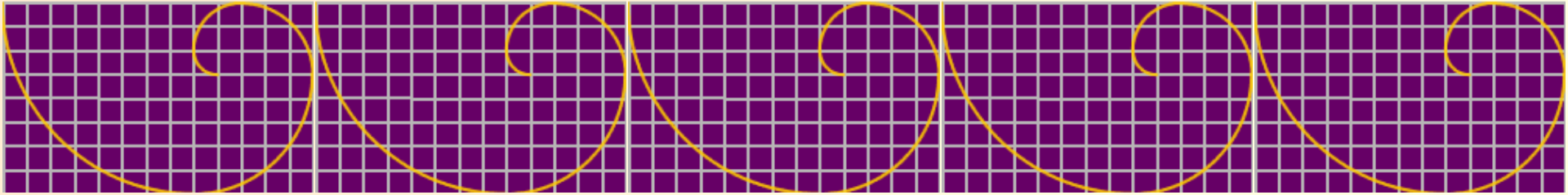


Counting, the Fibonacci Way

1	1	2	3	

Counting, the Fibonacci Way

1	1	2	3	5
8	13	21		



1	1	2	3	5
8	13	21	34	55
89	144	233	377	610
987	1597	2584	4181	6765

Fibonacci Sequence



About Fibonacci The Man

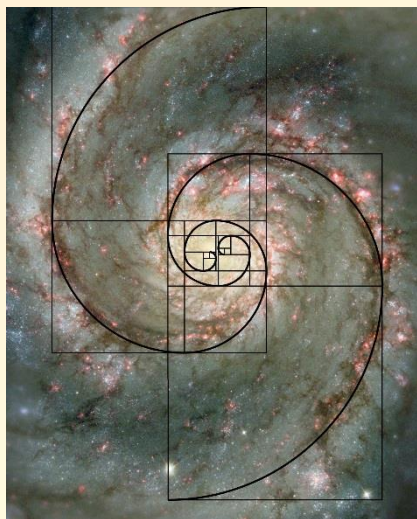
His real name was Leonardo Pisano Bogollo, and he lived between 1170 and 1250 in Italy.

"Fibonacci" was his nickname, which roughly means "Son of Bonacci".



As well as being famous for the Fibonacci Sequence, he helped spread Hindu-Arabic Numerals (like our present numbers 0,1,2,3,4,5,6,7,8,9) through Europe in place of Roman Numerals (I, II, III, IV, V, etc).

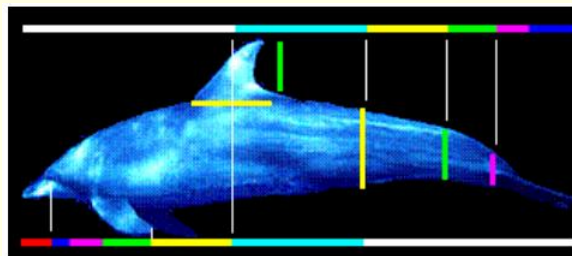
We use the Fibonacci Sequence as a window to see how math is present in nearly everything !



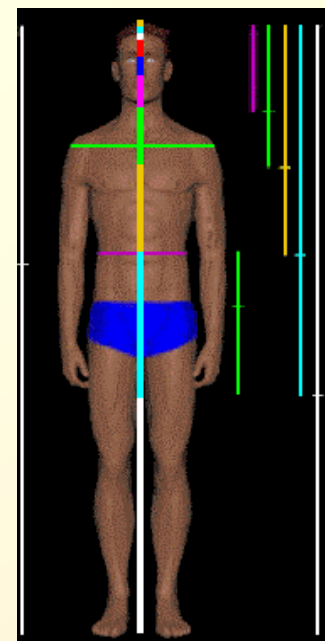
Space



Plants



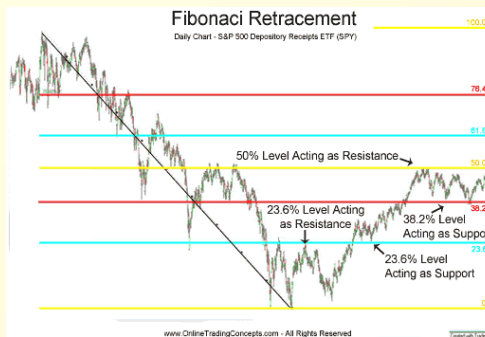
Animals



Ourselves



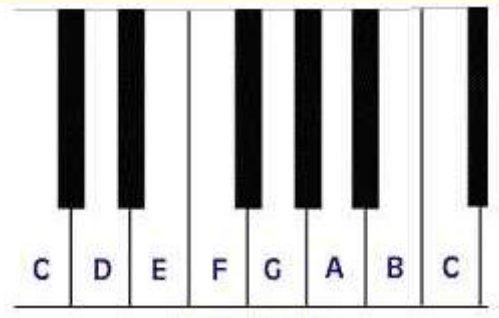
Art



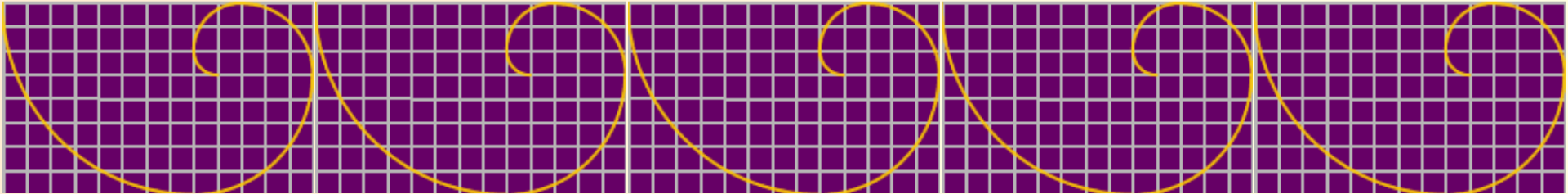
Finances

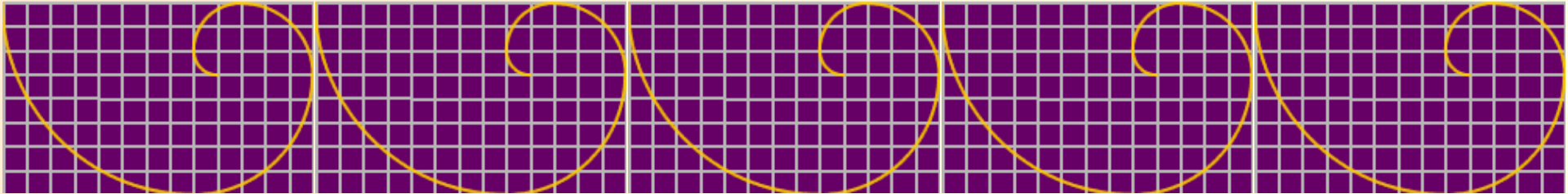


Architecture



MUSIC

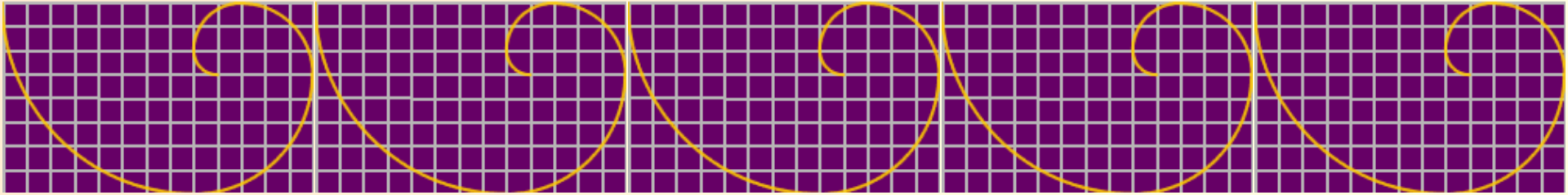
- 
- ☀ Fibonacci found that his sequence followed Nature, mostly in terms of how things Grow.
 - ☀ By looking closer at the sequence we can see some COOL things.
 - ☀ First lets take a look as the idea of Phi or Φ , the 21st letter of Greek alphabet.

- 
- ☀ Φ is also called **THE GOLDEN RATIO** or sometimes the **Golden Mean**
 - ☀ It is a special number found inside of the **Fibonacci Sequence**
 - ☀ This number has fascinated people for over **4,000 years**.
 - ☀ **So... What is it???**

☀ Φ is found when you take each number and divide it by it's previous number. SIMPLE!!

1	1	2	3	5
8	13	21	34	55
89	144	233	377	610
987				

☀ 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144..



☀ **1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144..**

☀ **1/1=1**

☀ **2/1=2**

☀ **3/2=1.5**

☀ **5/3=1.66**

☀ **8/5=1.6**

☀ **13/8=1.625**

☀ **On and On and On = 1.618033... Φ**

☀ **Phi is an irrational number meaning it never ends**

☀ This Golden Ratio shows up ALL OVER

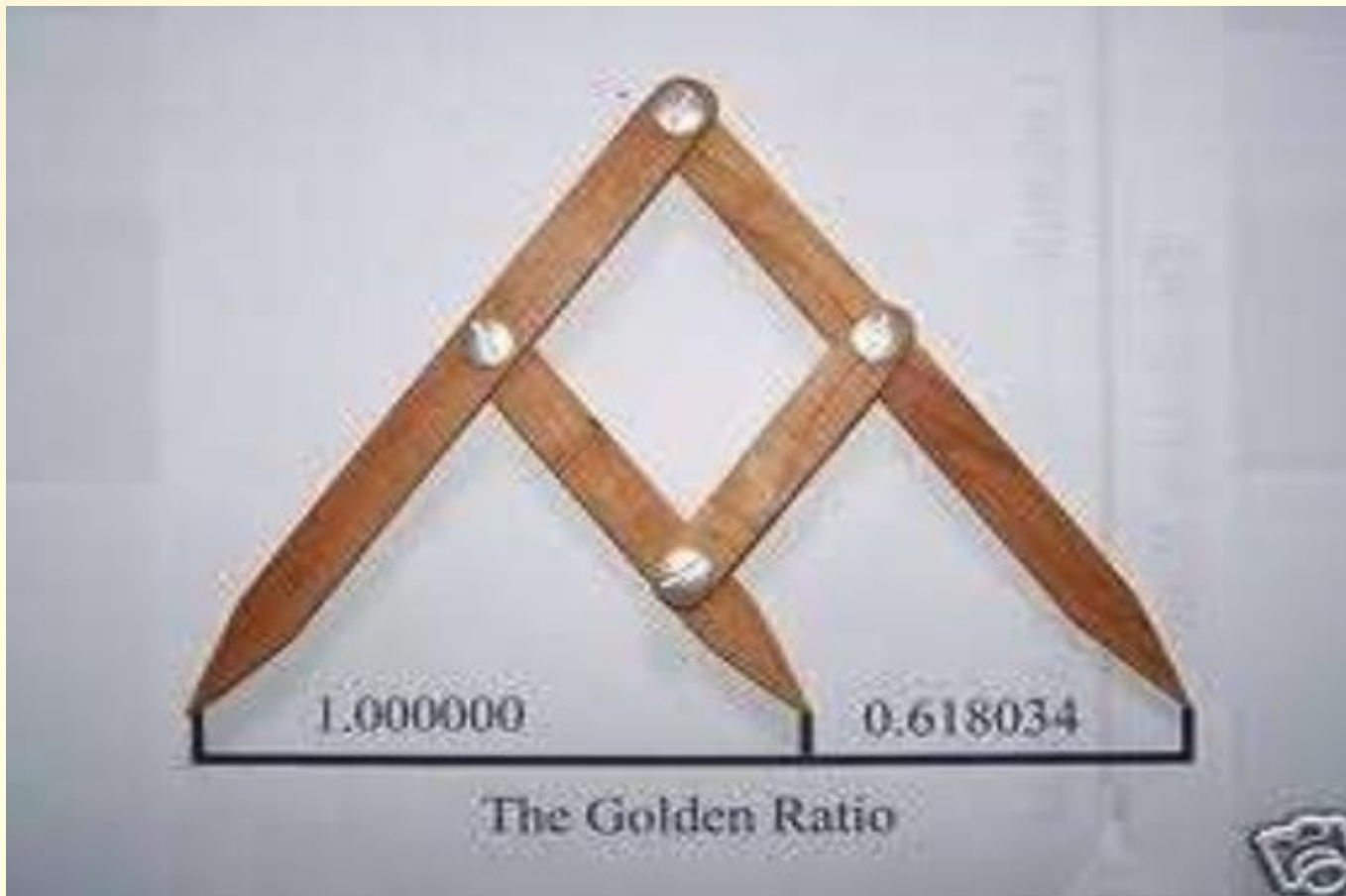


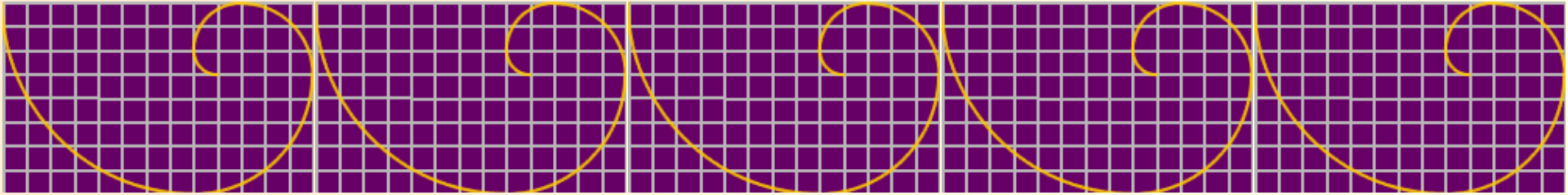
- ☀ Most stamps have one side that is 1.618 time longer than the other. This shape is called a Golden Rectangle.



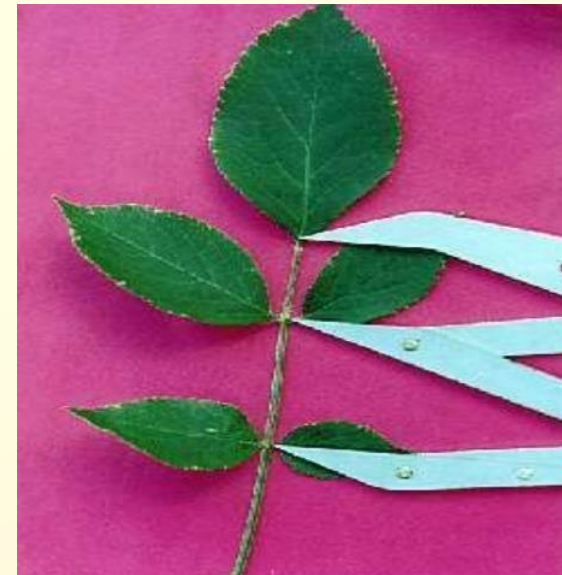
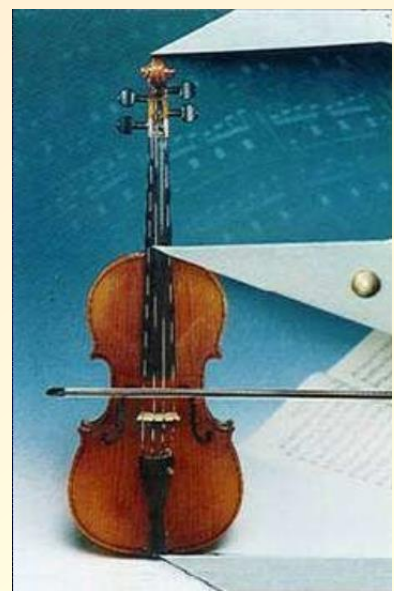
- ☀ Most monitors and TV screens try to use a Golden Rectangle for the best viewing

- ☀ A Golden Ratio Gauge is used to quickly draw or measure.

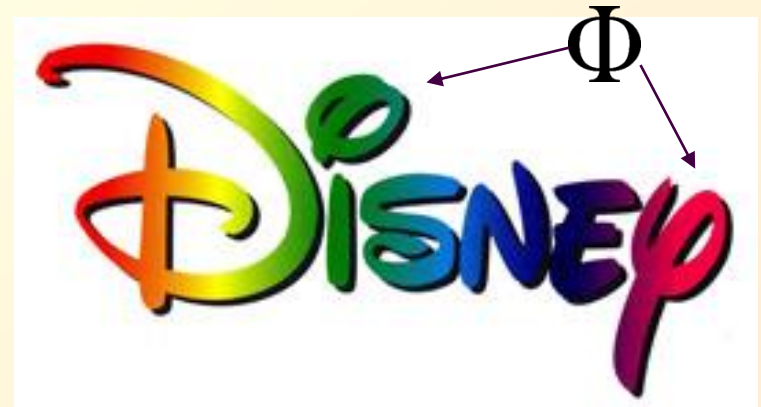
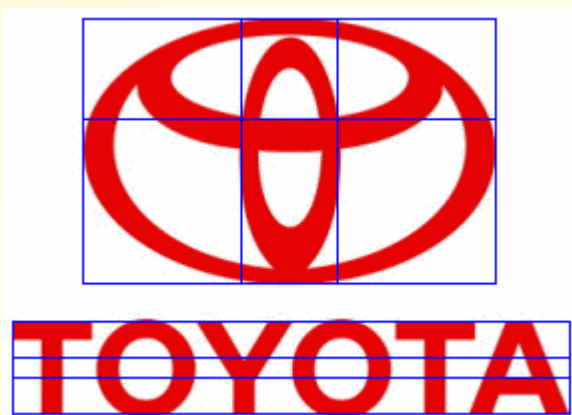
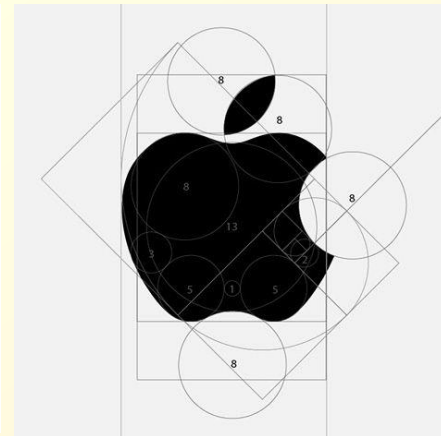




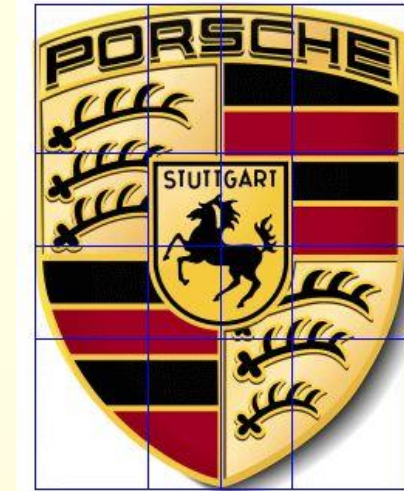
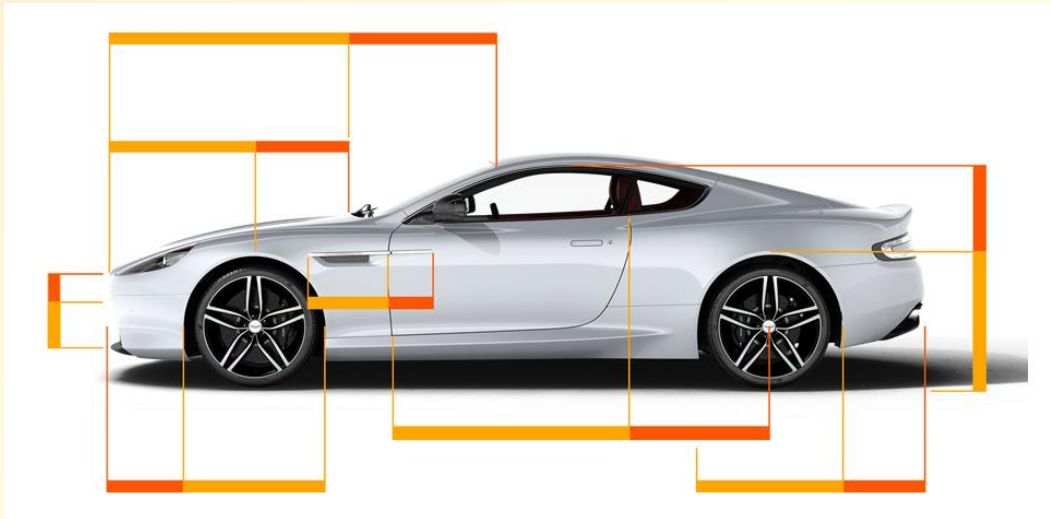
☀ Examples of using the Golden Mean Gauge



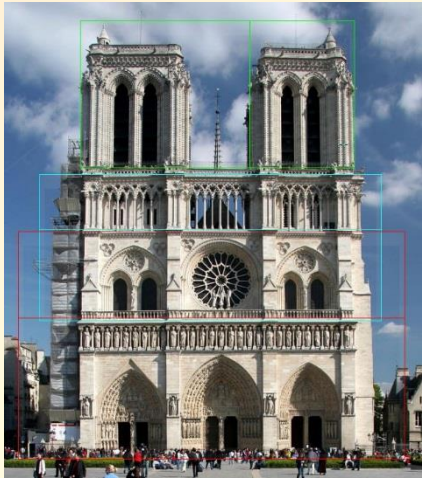
☀ This ratio shows up ALL OVER



☀ The Golden Ratio helps cars look GOOD!



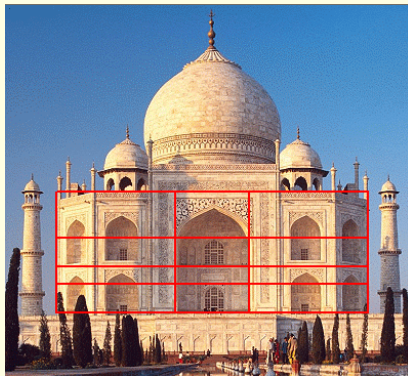
☀ Much of old and new architecture uses the Golden Mean as a base in the design.



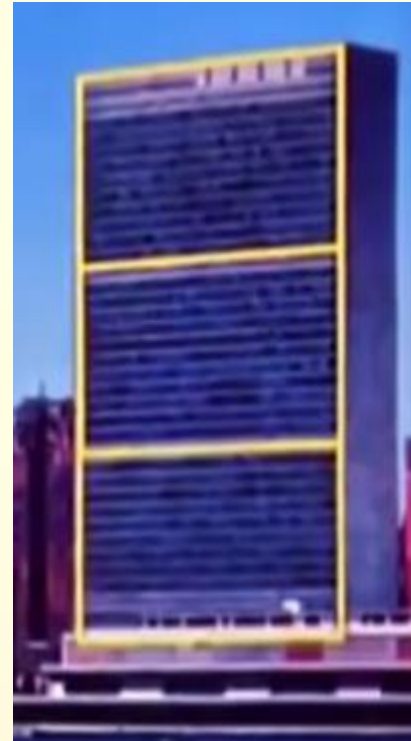
Notre Dame



The Parthenon



Taj Mahal

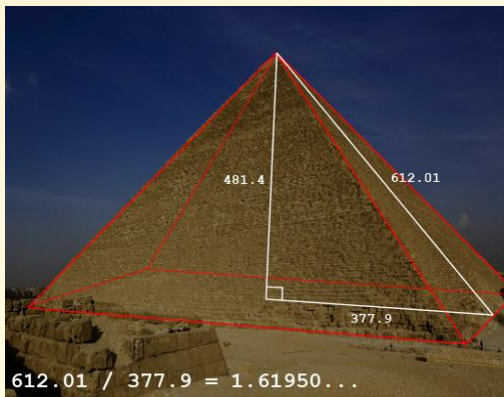


The UN



Toronto's
CN Tower

☀ Lots of Ancient designs were based on the Golden Mean



Great Pyramids



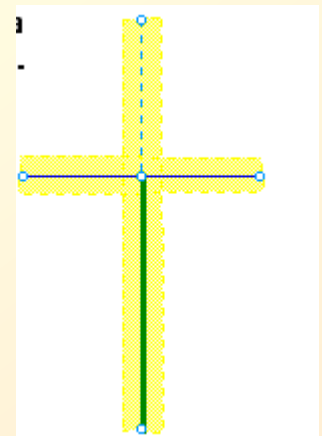
Noah's Ark



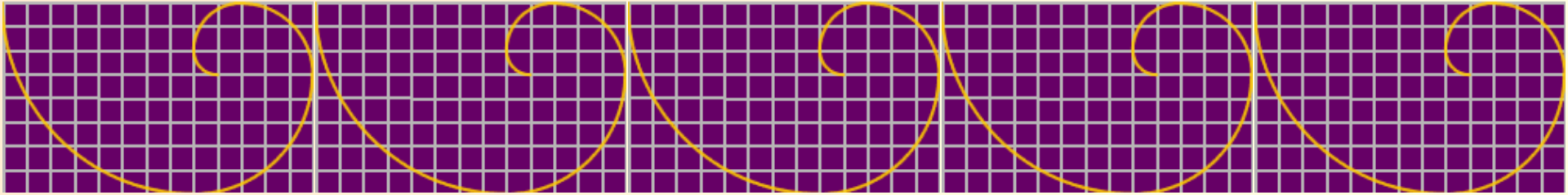
Ark of the Covenant



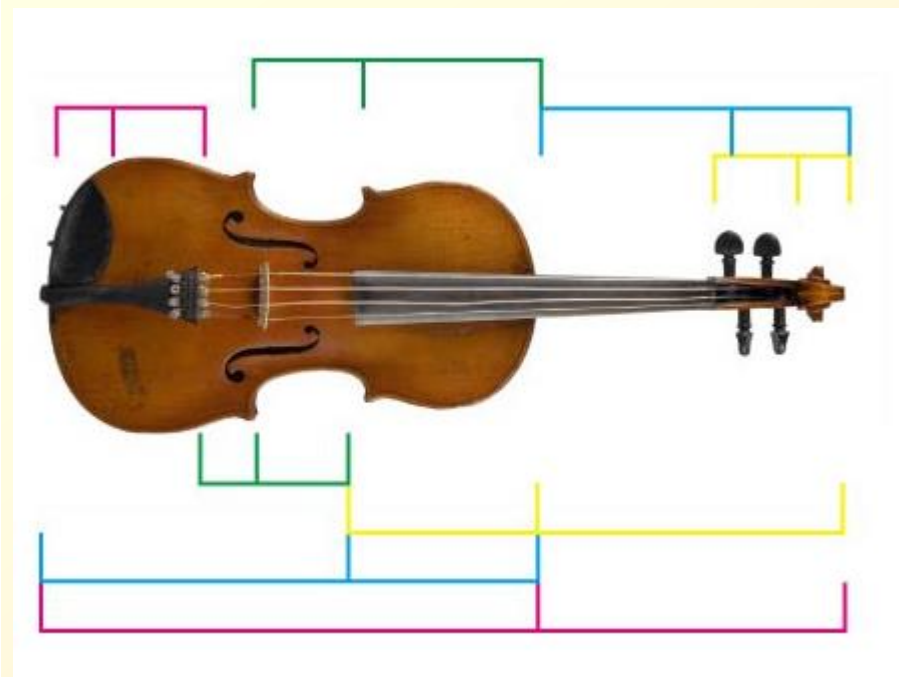
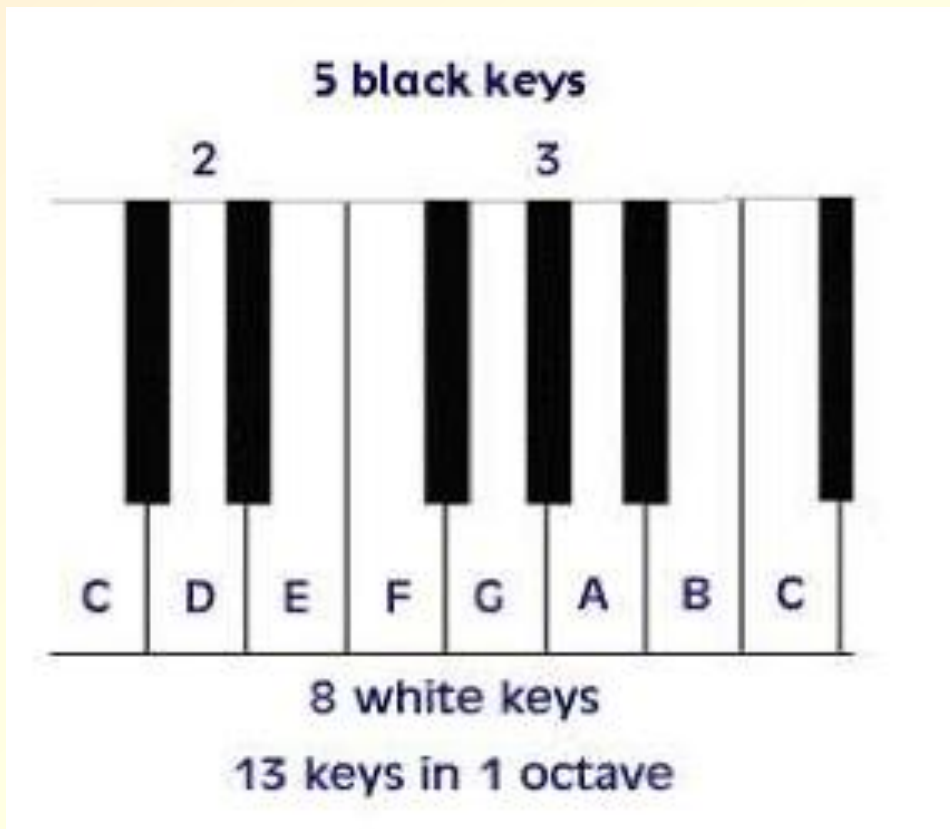
Biblical Altars



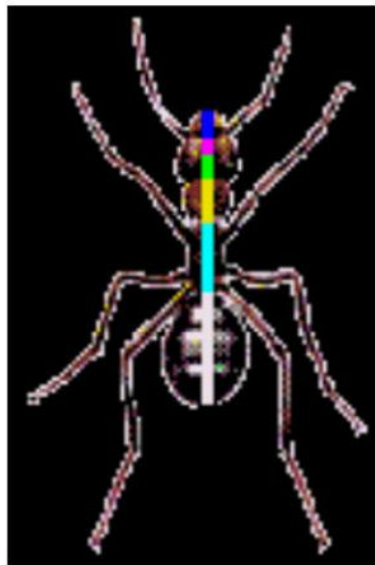
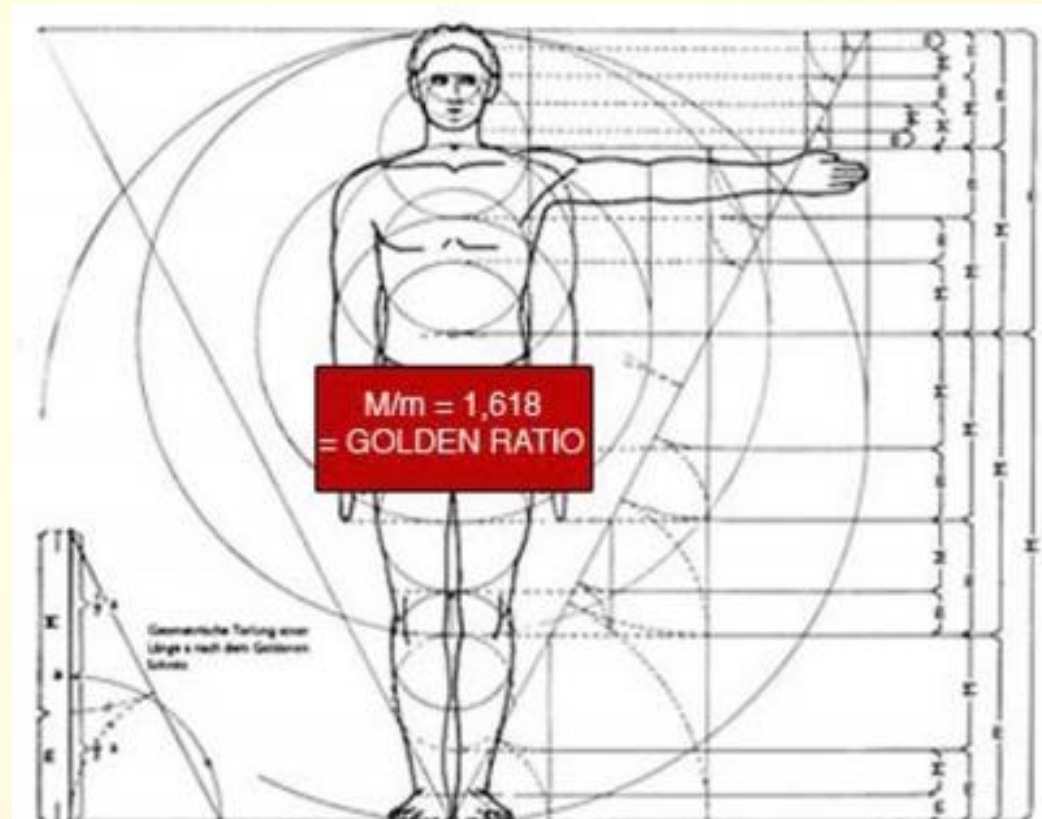
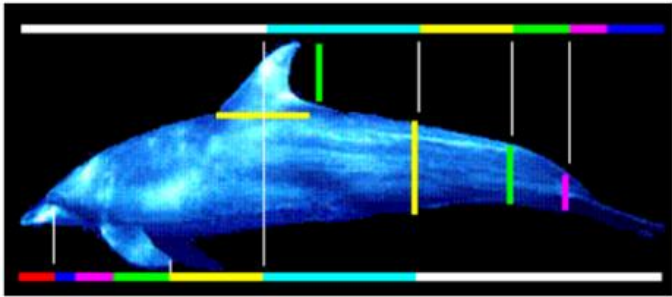
Roman Crucifix

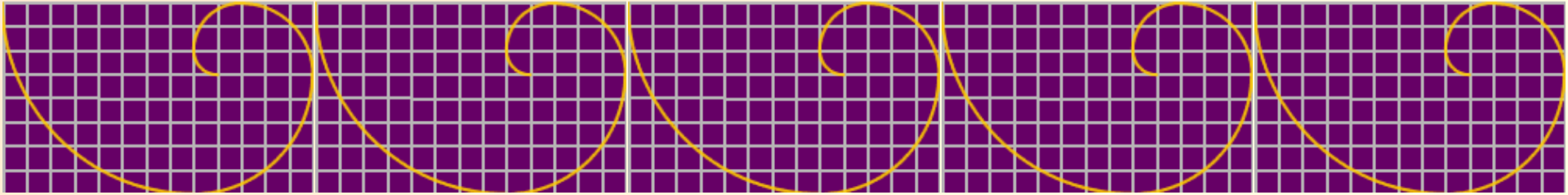


☀ Fibonacci numbers and ratio show up in music

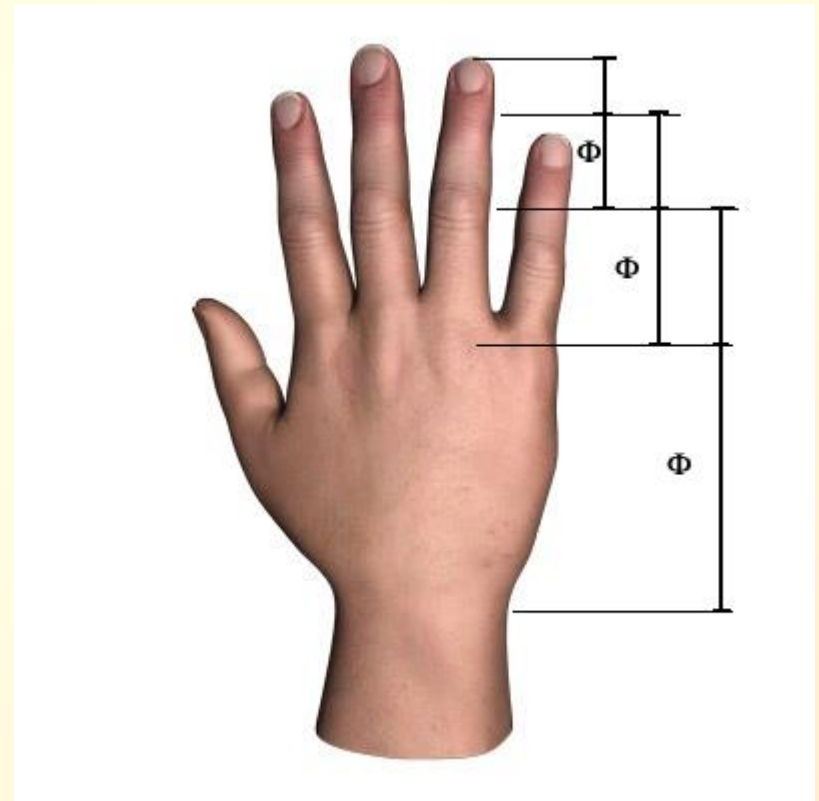
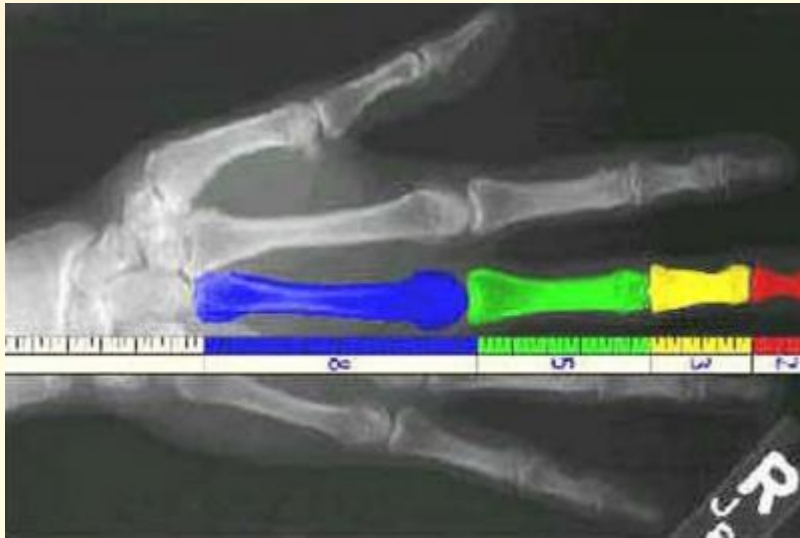


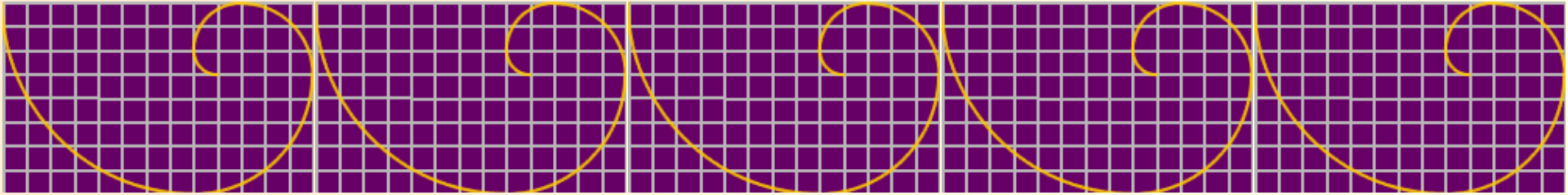
☀ The Golden Mean shows up in most living things





☀ The Golden Mean shows up in You

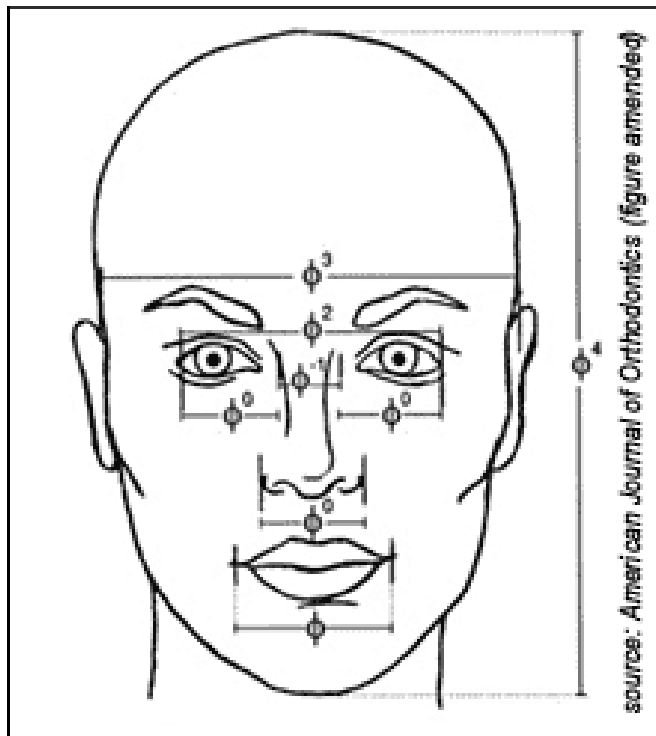




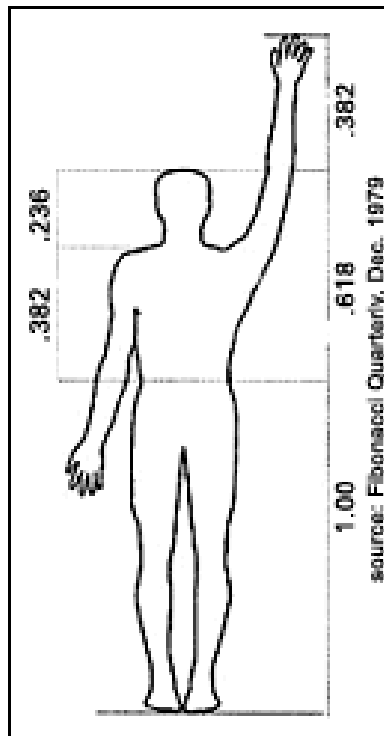
☀ The Golden Mean shows up in You



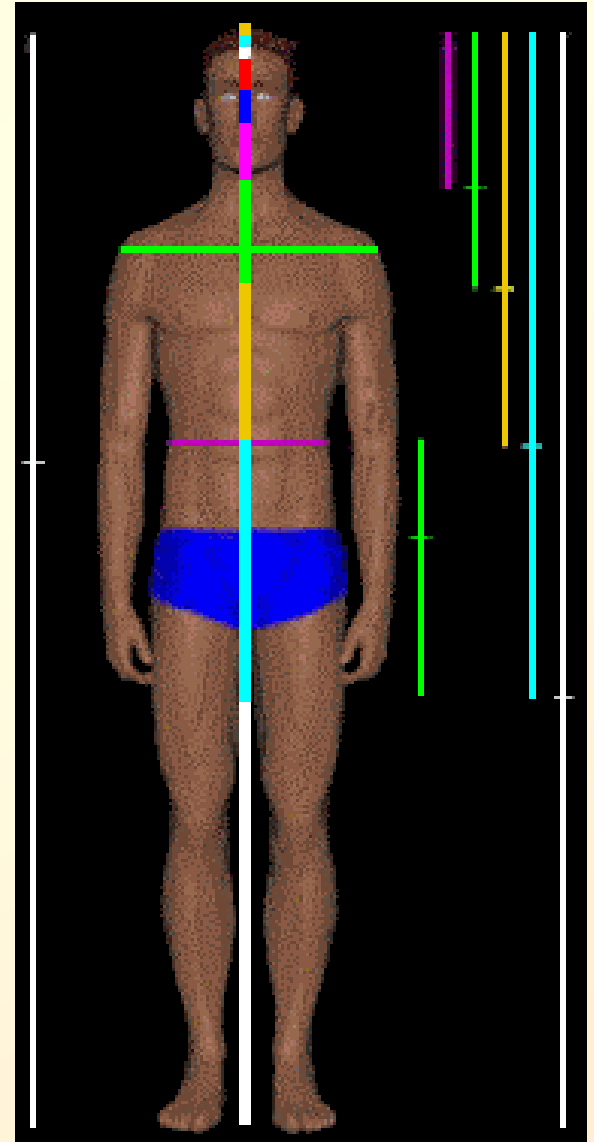
☀ Your body is one big example of the use of Phi in a perfect design.

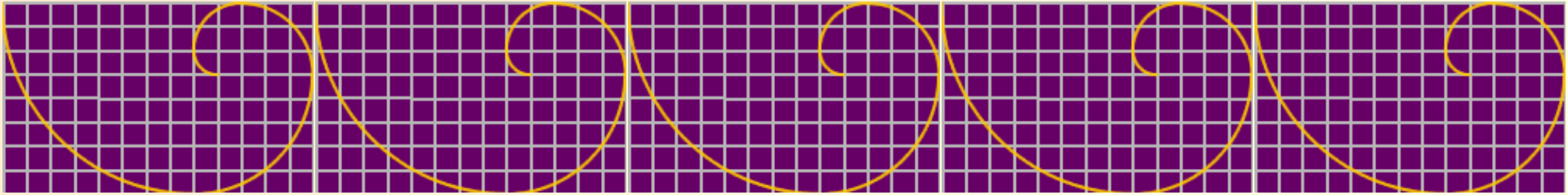


Fibonacci relationships of the human head

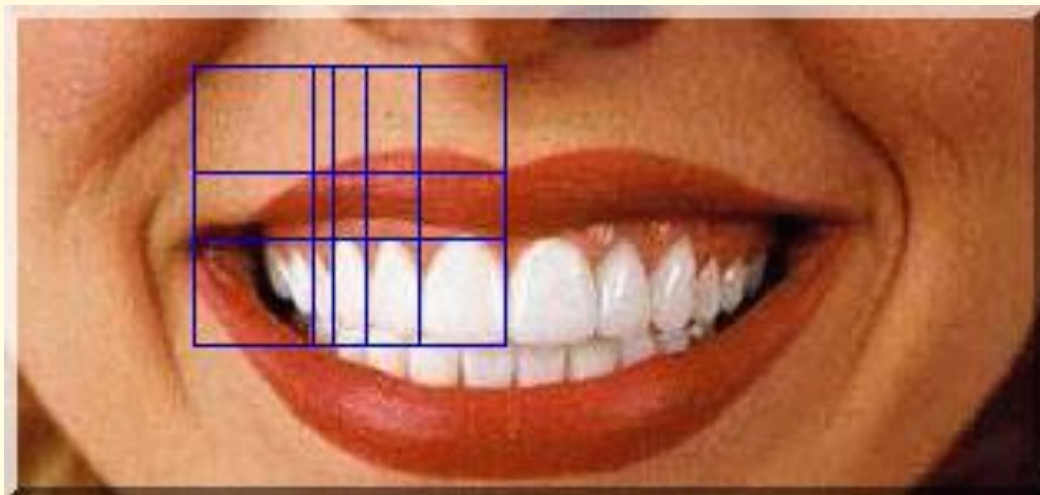


Fibonacci relationships of the human body

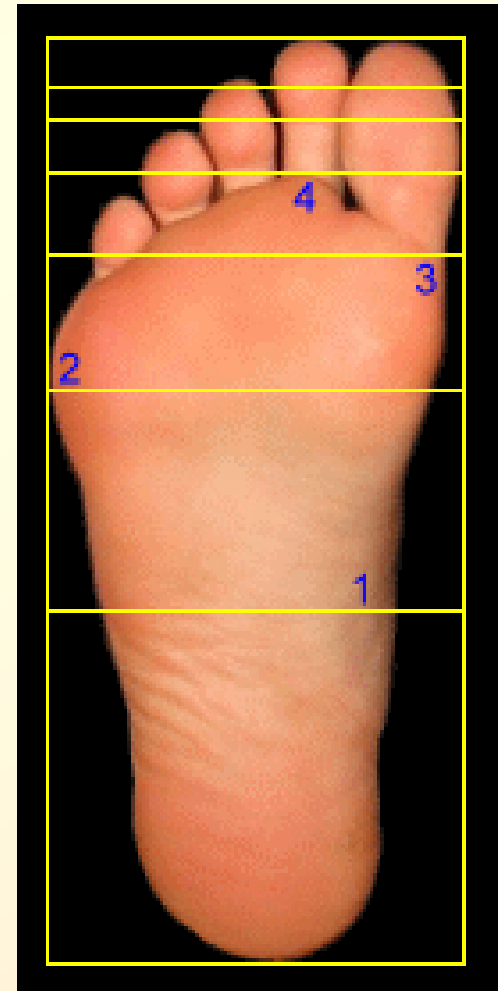


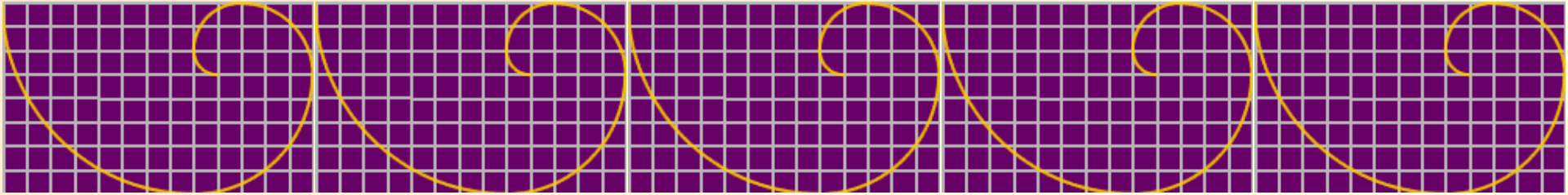


☀ Even out teeth are based on the Phi ratio of 1.618

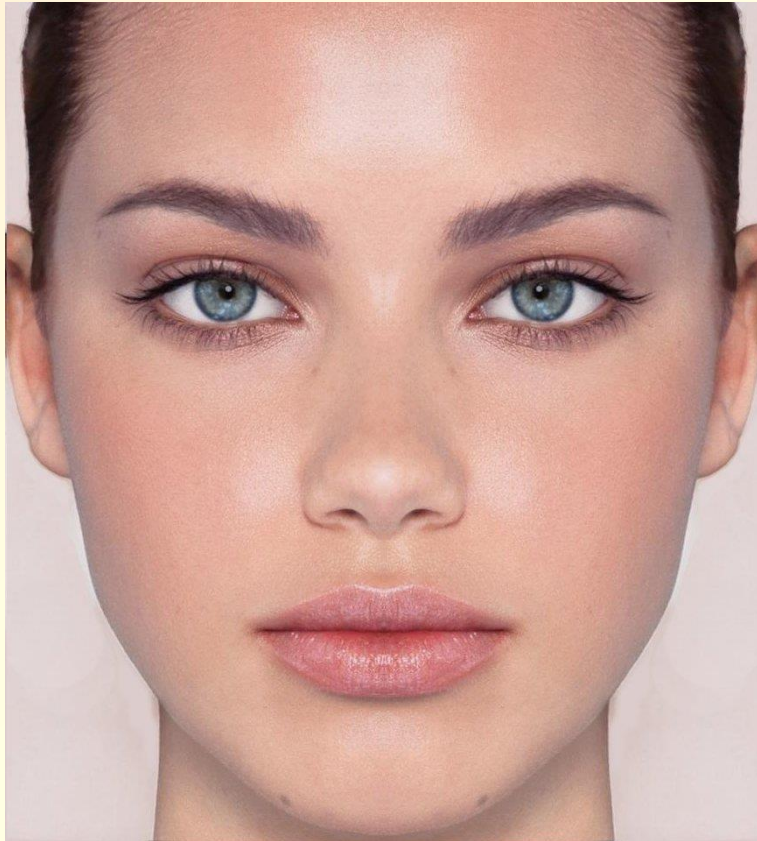


☀ From the tips of your fingers to the end of your toes we see the evidence of the Phi ratio.



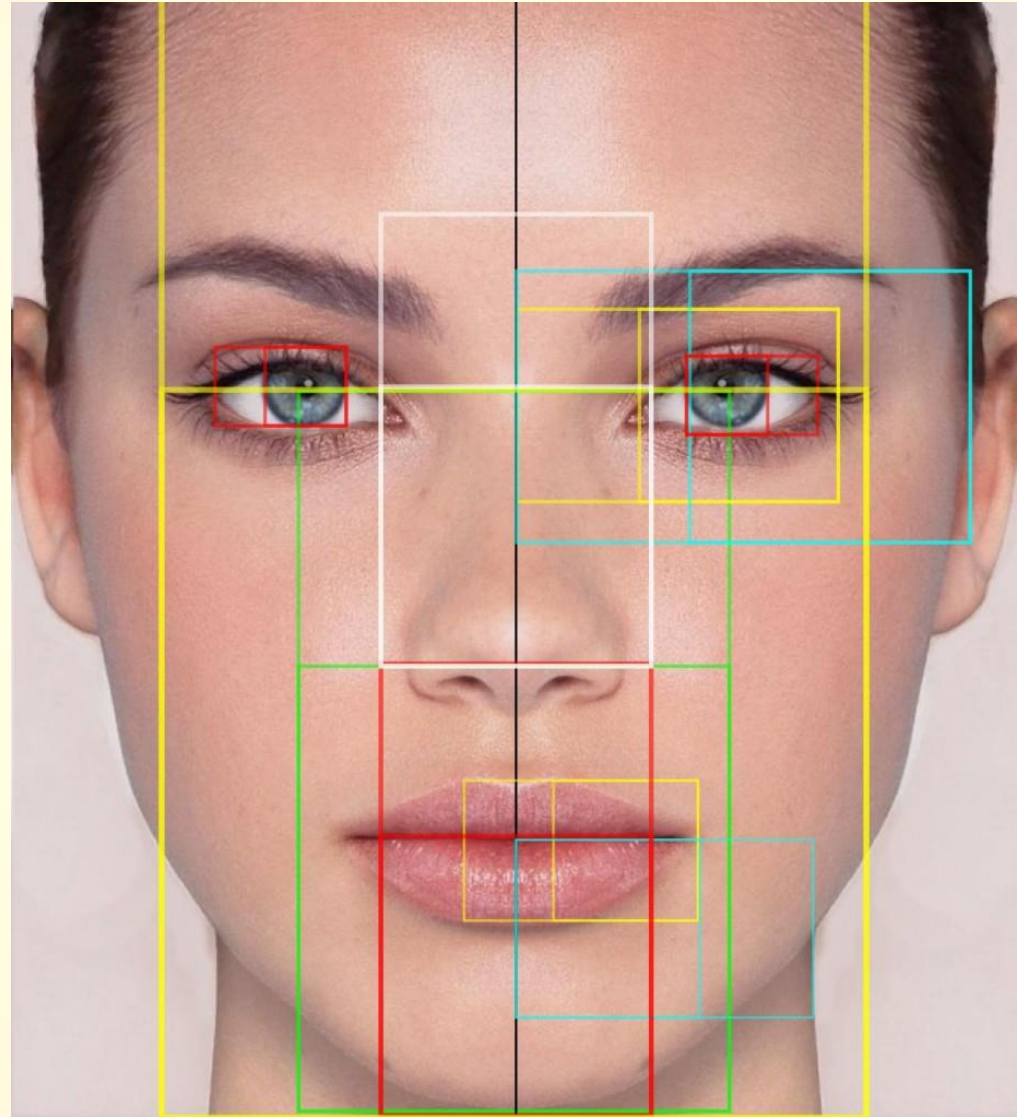


☀ We also can see that our faces are completely based Phi.

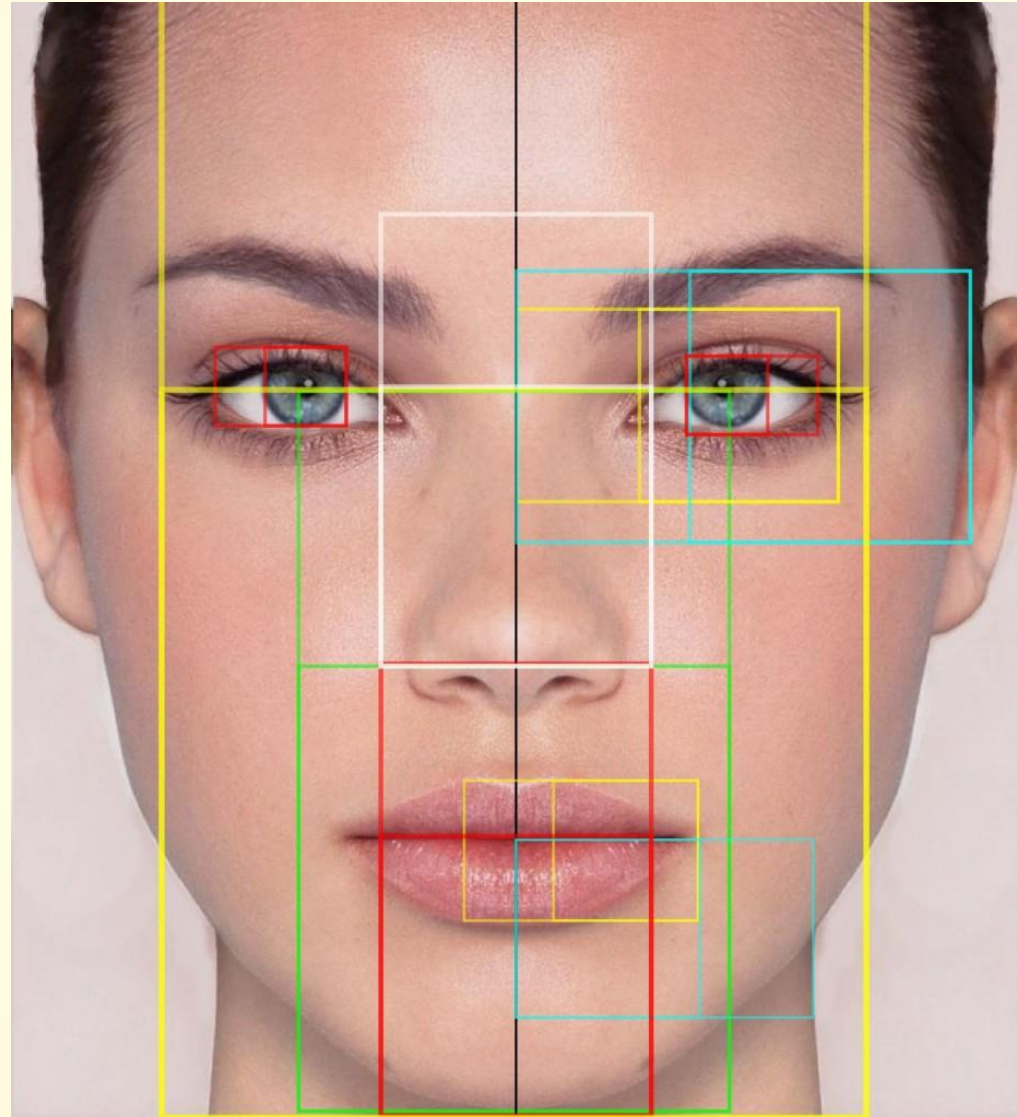


☀ CAN YOU SPOT HOW THE Phi RATIO IS USED IN THE FACE?

- ☀ Nearly every detail in the layout of the human face is based on Phi. The slight variation from Phi makes us look like who we are.
- ☀ Perfect and still completely different!



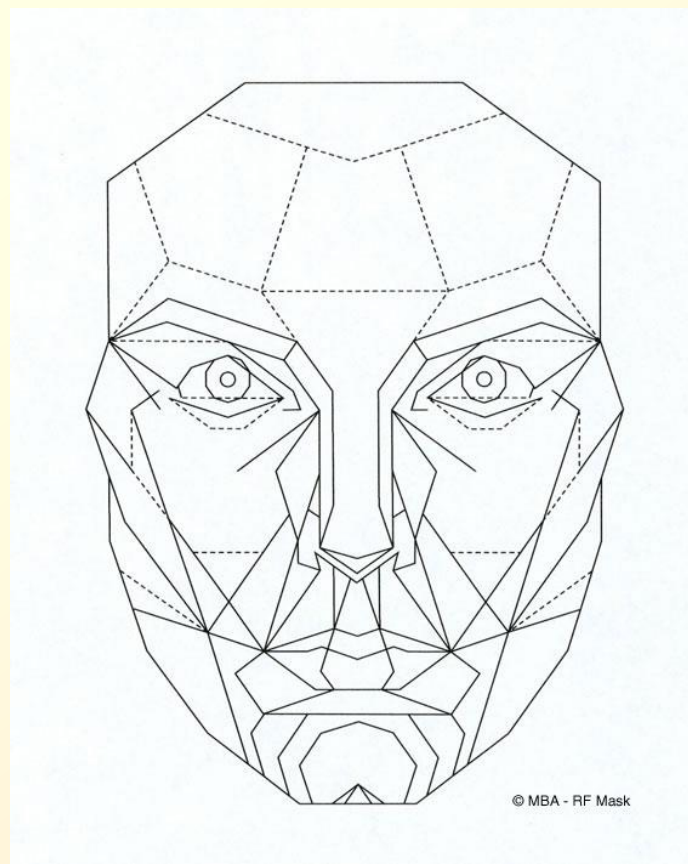
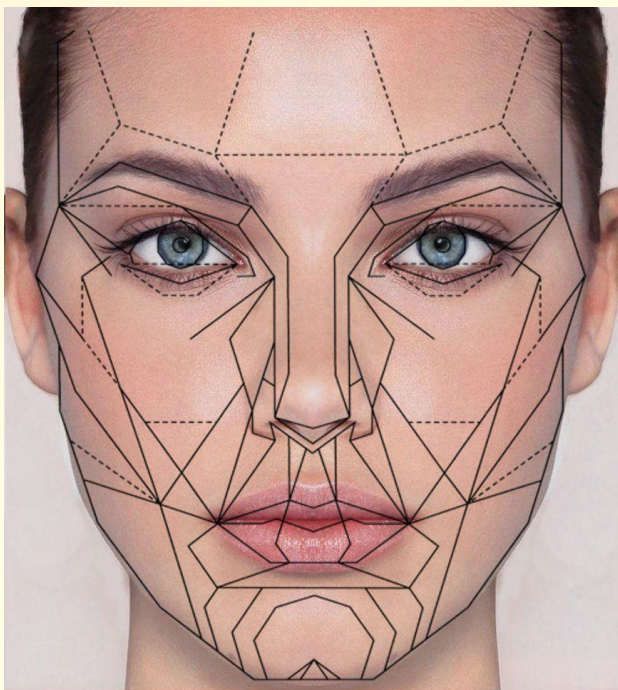
- ☀ The closer the proportions are to the 1.618 ratio the more perfect or “beautiful” something is considered to be.



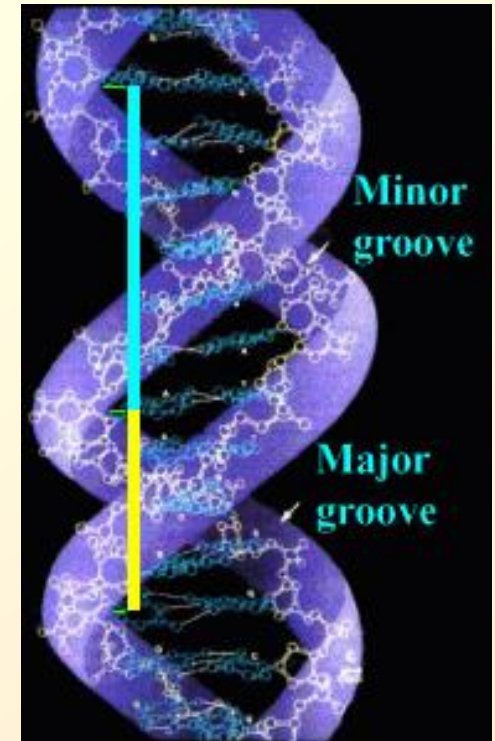
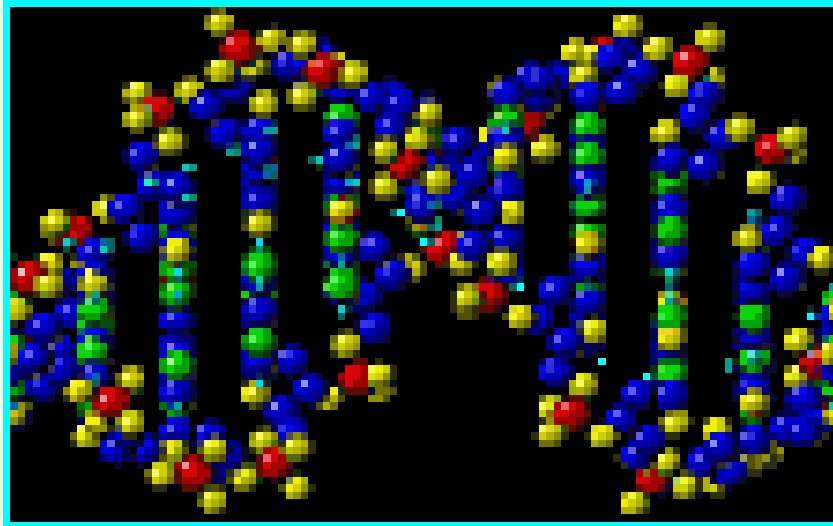
- ☀ Sometimes we don't need Phi to tell us something is not beautiful!!

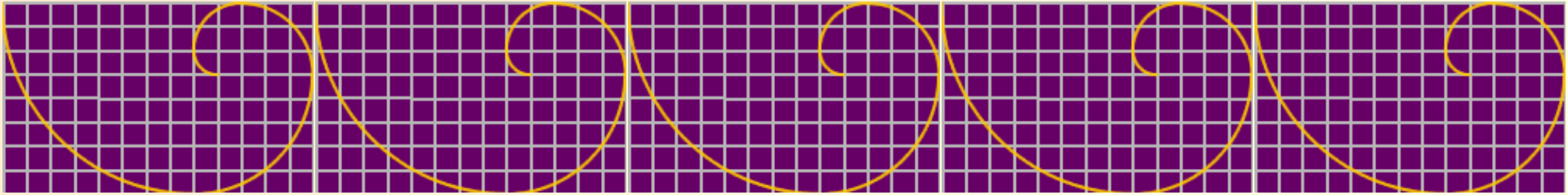


- ☀ The science of facial recognition is based on Phi and allows computers to “see” us in forms of math. Each and every person’s facial math is unique.



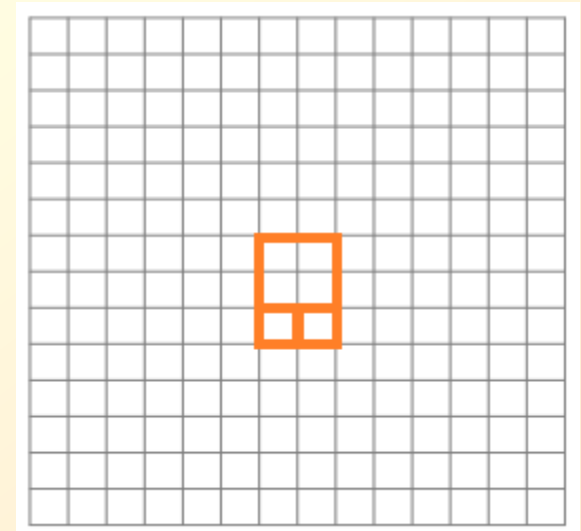
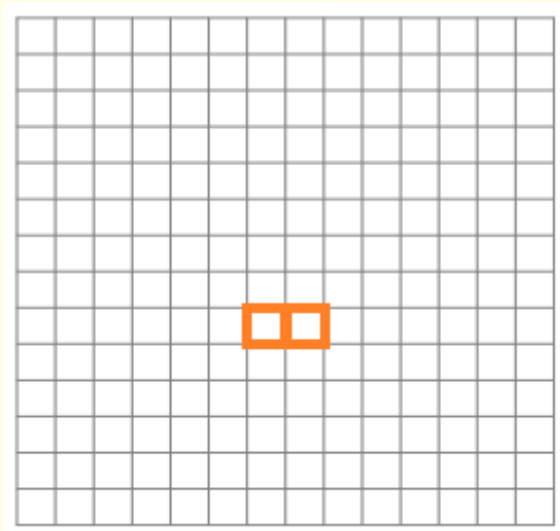
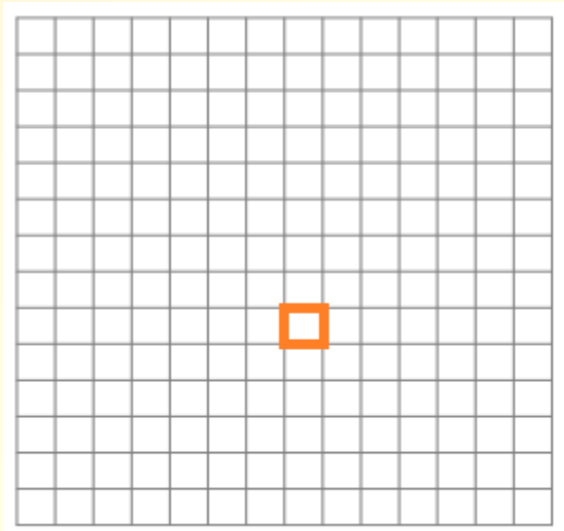
- ☀ The DRNA molecule, the program for all life, is based on the golden section. It measures 34 angstroms long by 21 angstroms wide for each full cycle of its double helix spiral.



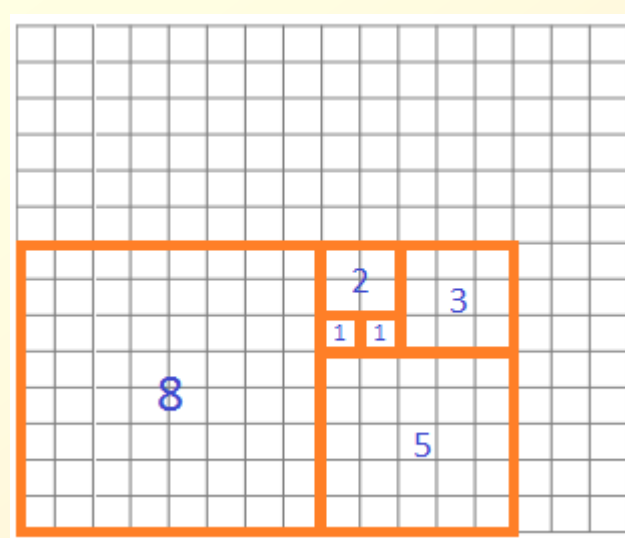
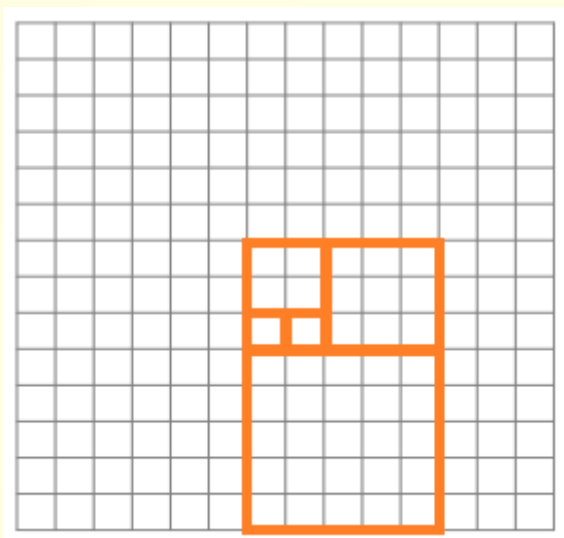
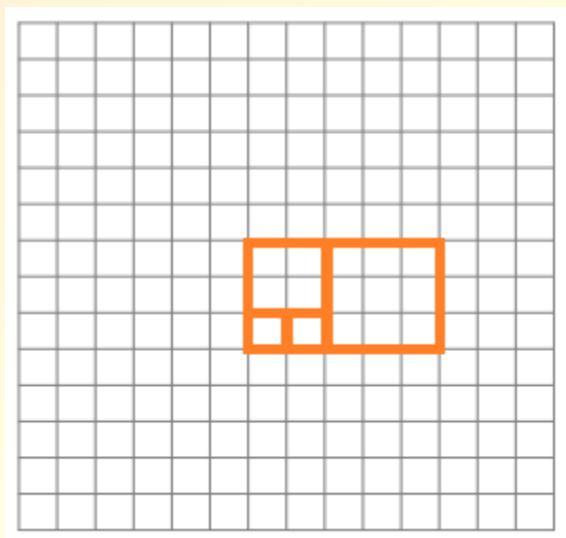


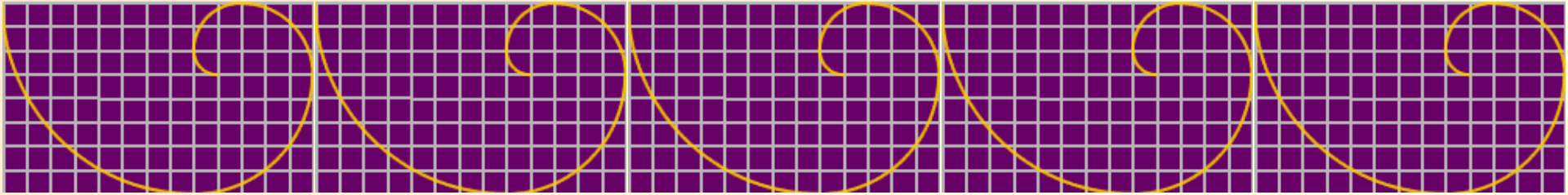
☀ Now that we understand the idea of the Phi ration let's see what else we can do with Fibonacci numbers.

☀ Let's build a Fibonacci Spiral!

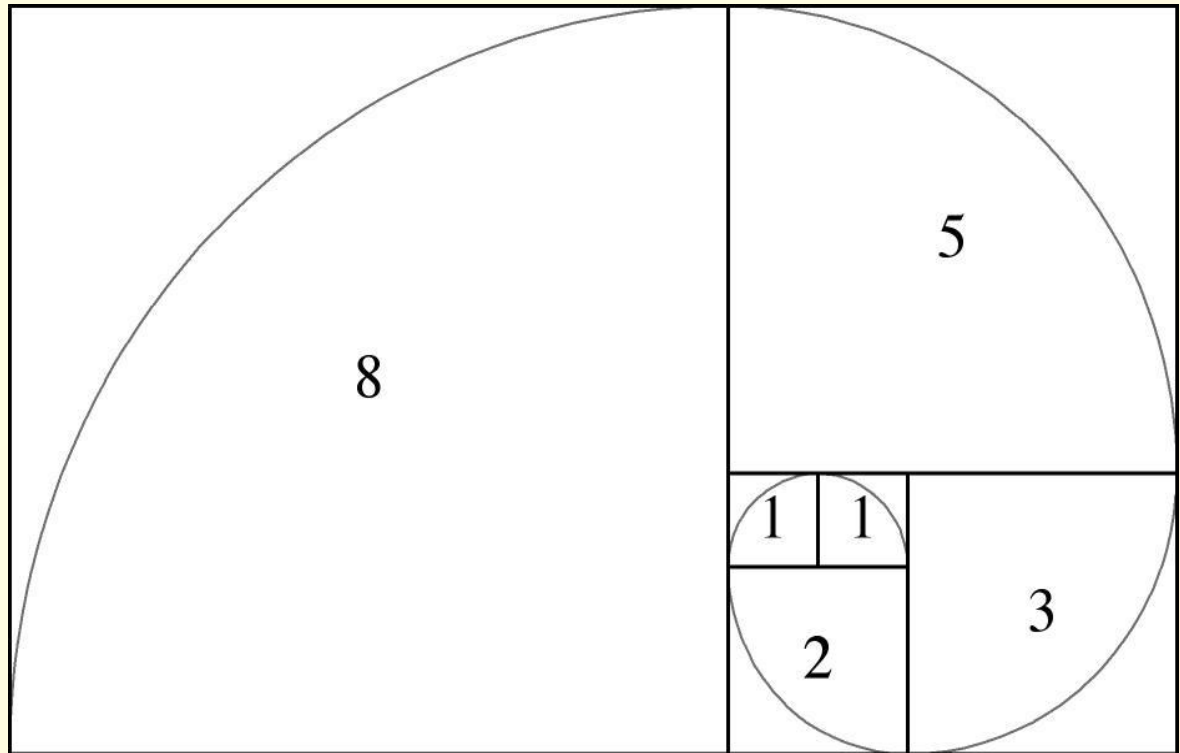
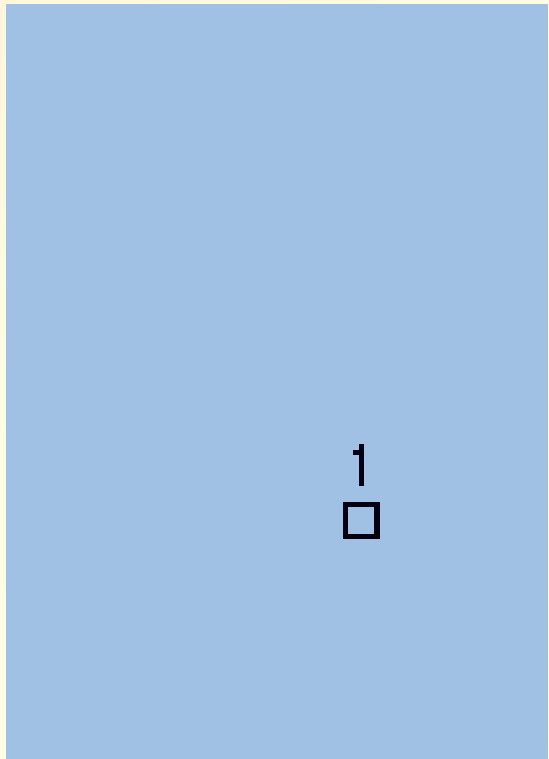


- Build the next square on the side of the previous square.

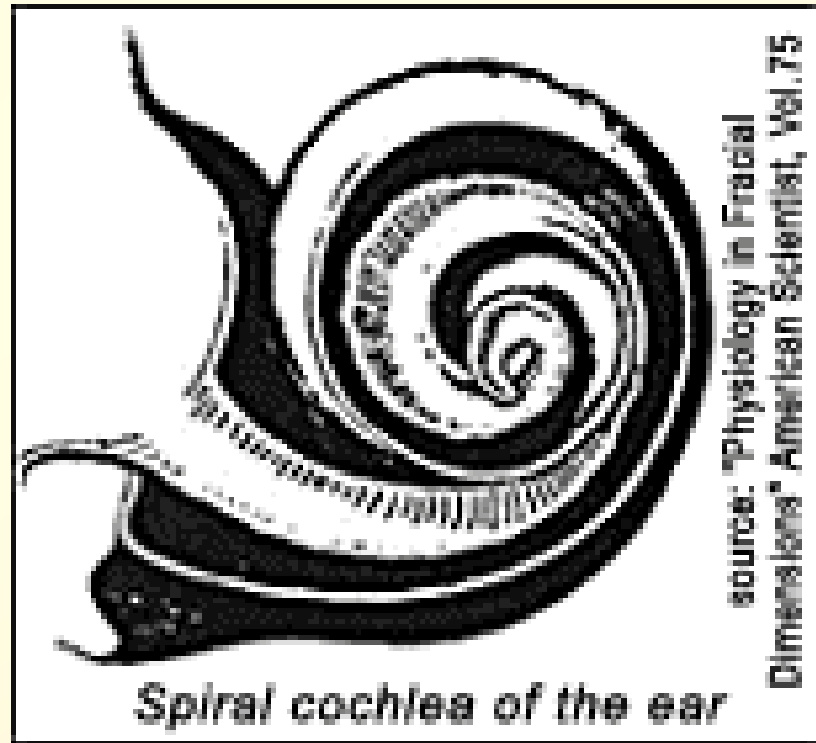
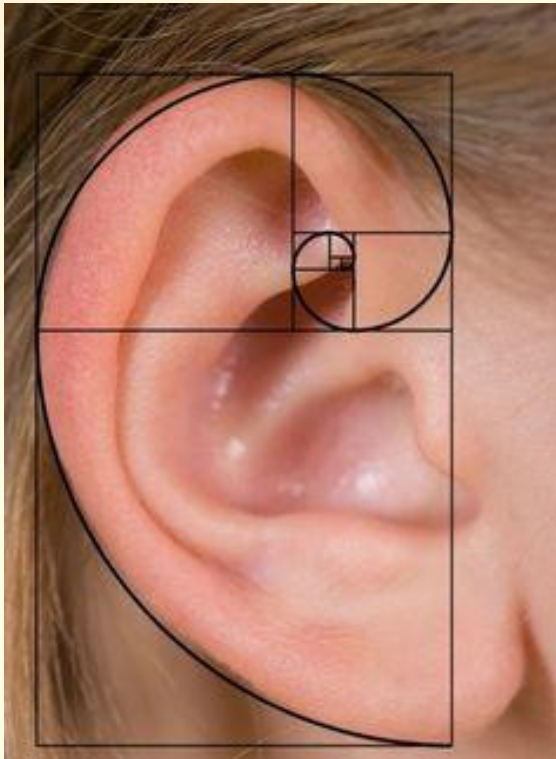




- Now as a final step we draw a curved line through the corners of each square to get a Fibonacci Spiral.
- So What !?!?!

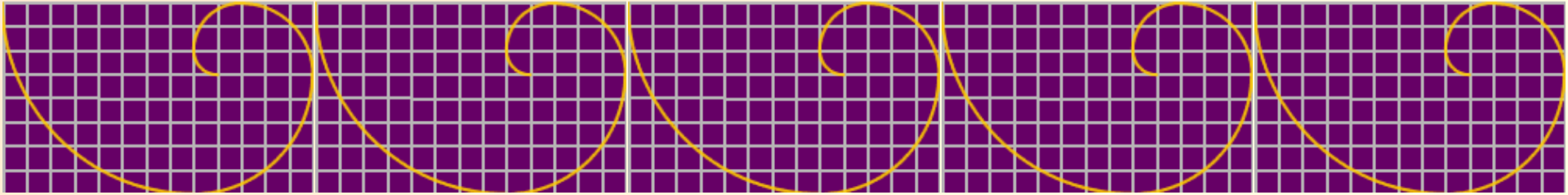


✦ It turns out that the Fibonacci Spiral is found everywhere!



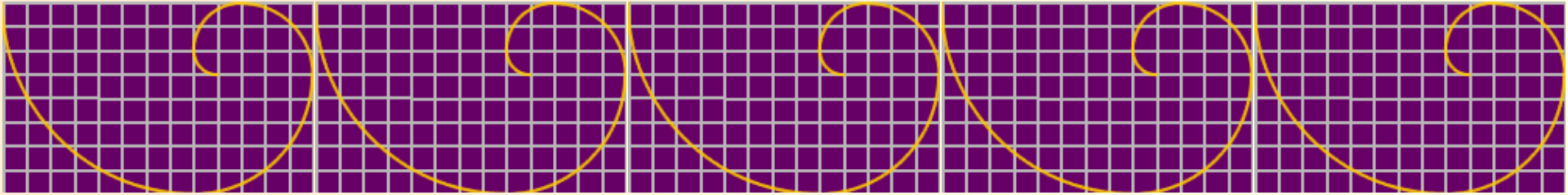
✦ It turns out that the Fibonacci Spiral is found in a lot of places!



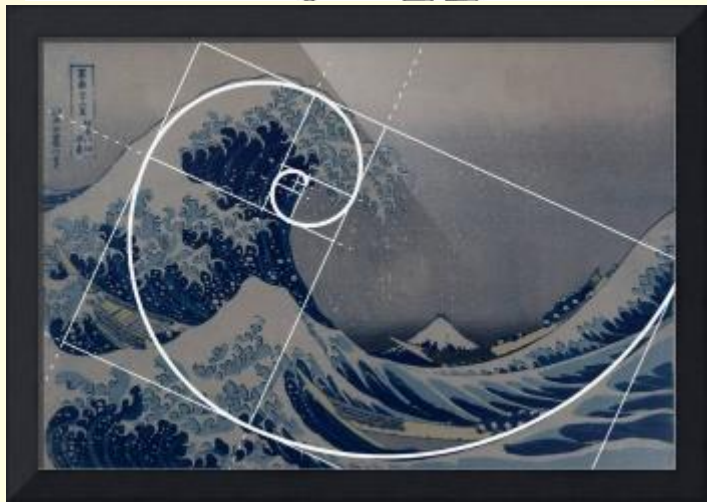
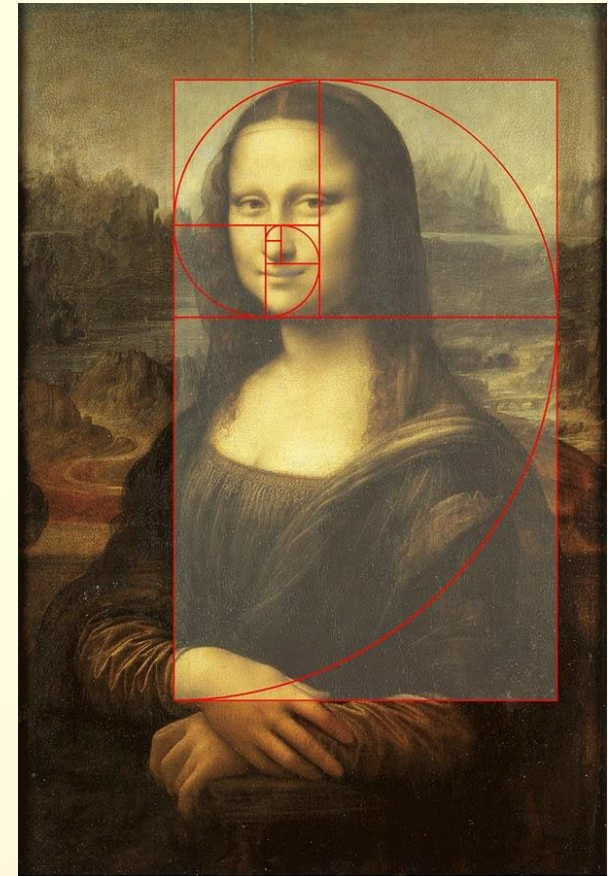
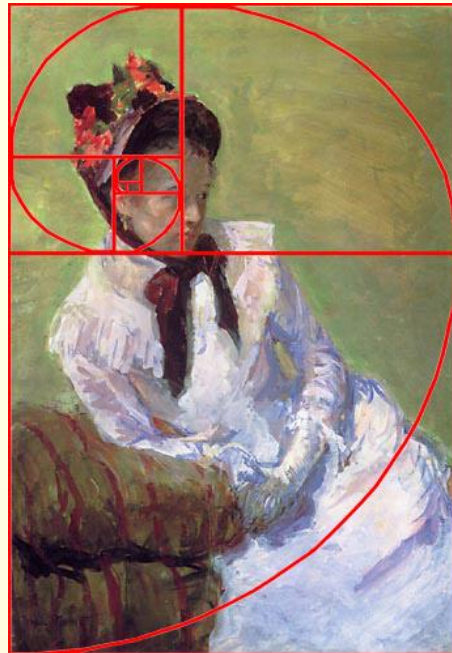
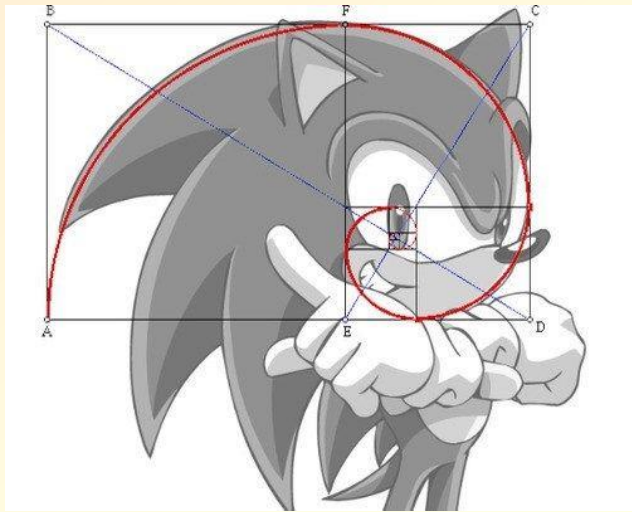


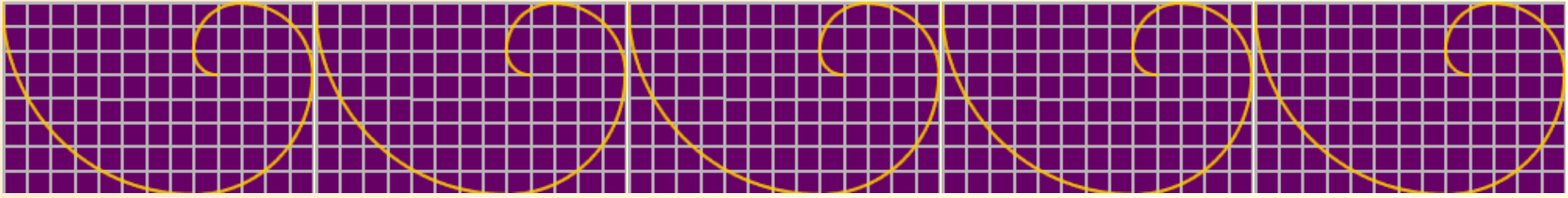
- ☀ You are setting in a HUGE Fibonacci Spiral. The Milky Way Galaxy, like most spiral galaxies, is shaped on Fibonacci.





☀ Spirals are used a lot in Art

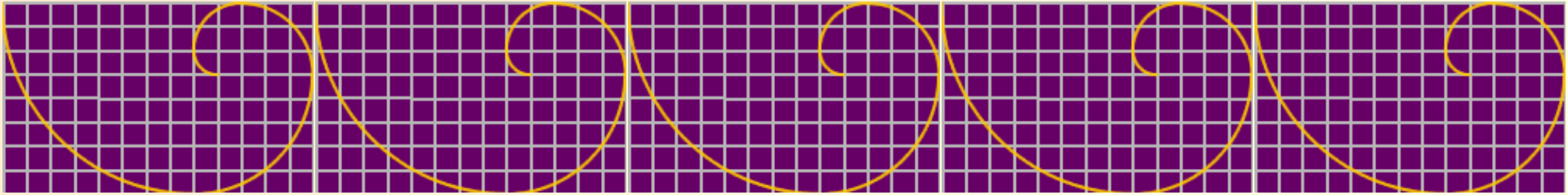




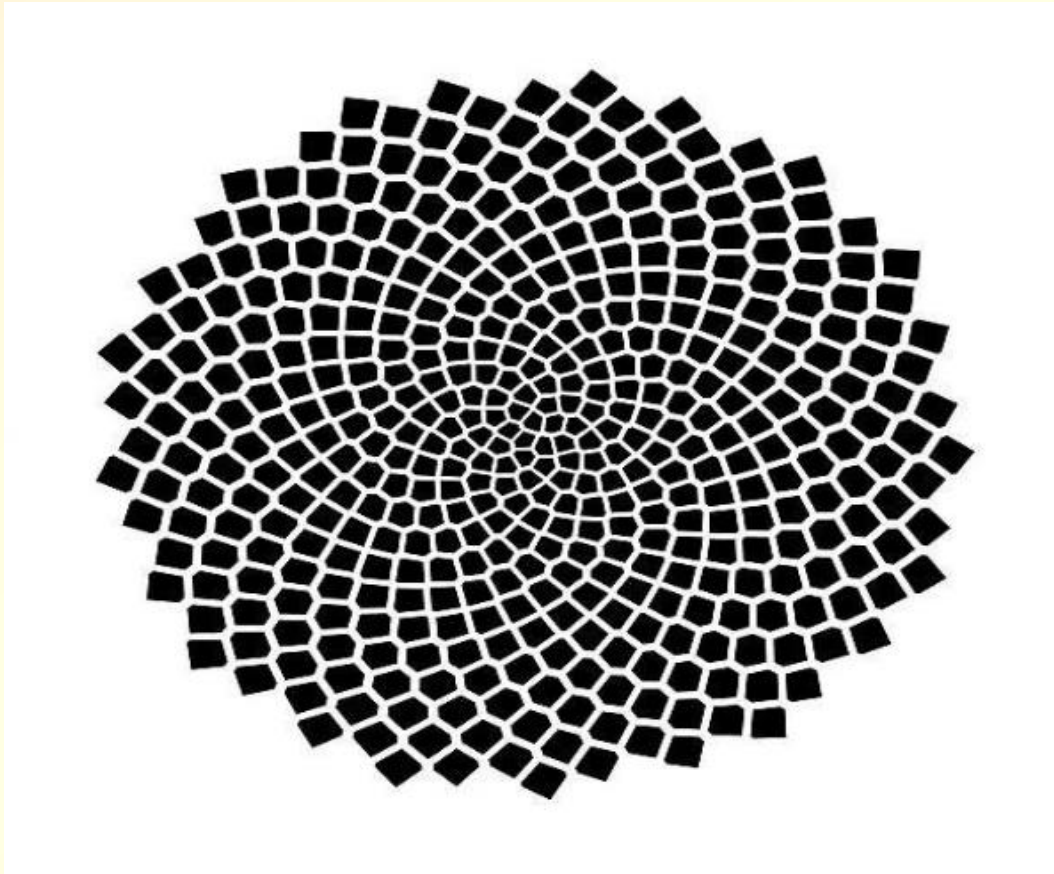
- ☀ The spiral is usually found in the arrangement of seeds in flowers.



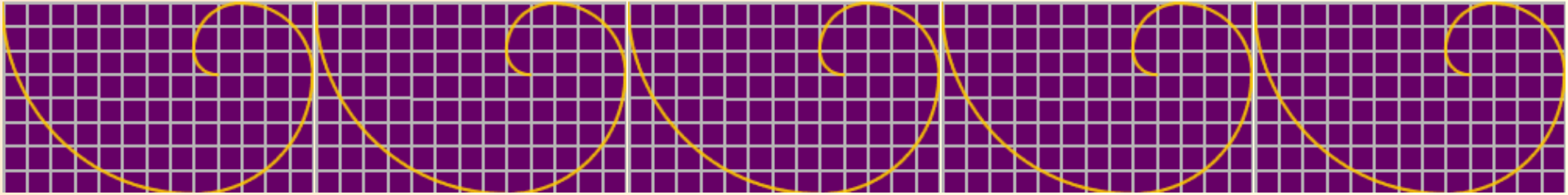
- ☀ Can you spot the spiral ??



- ✿ By packing seeds in a spiral, a plant can get the maximum amount of seeds grown in the minimum area.

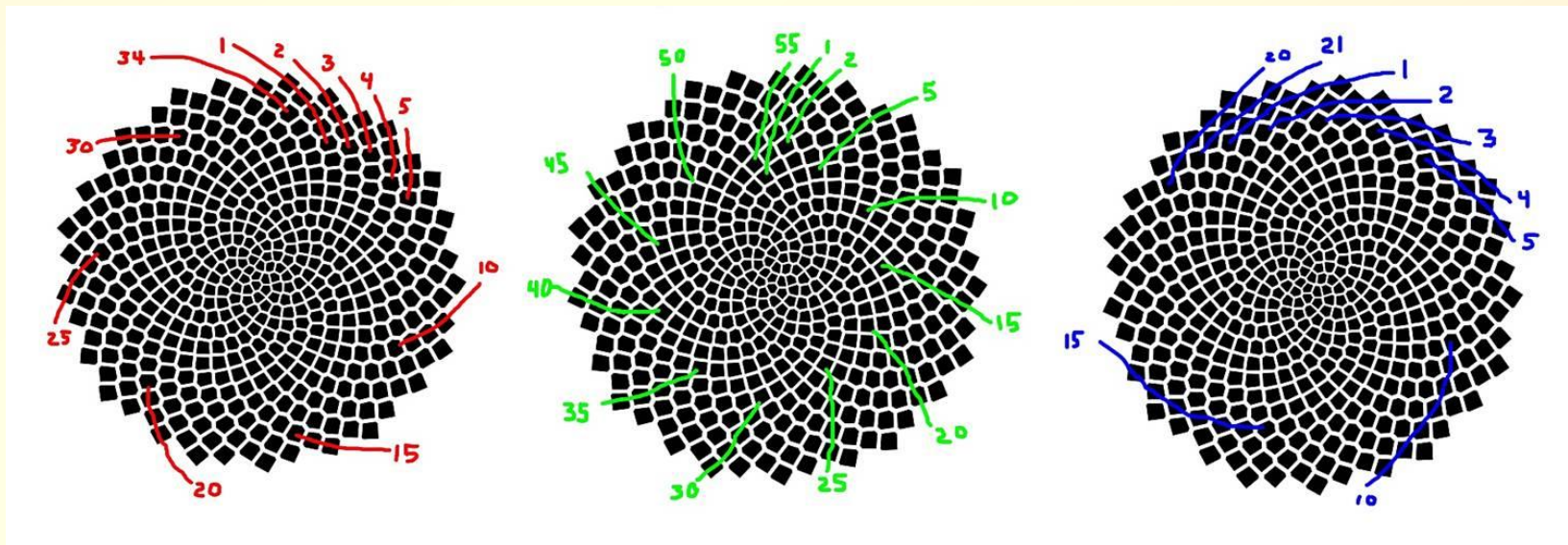


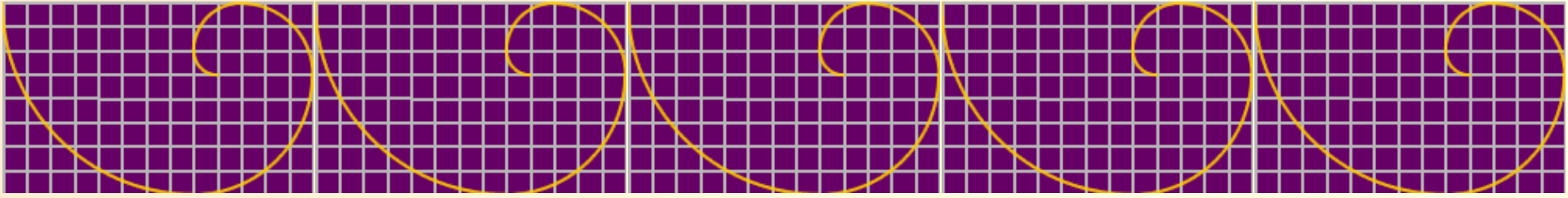
- ✿ Can you see the spirals yet?



☀ There are actually three separate spirals, running in both clockwise and counter clockwise

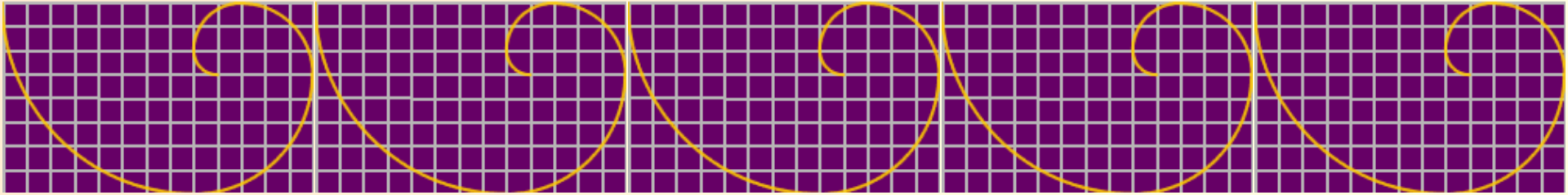
☀ If you count the number of spirals they are always a Fibonacci number



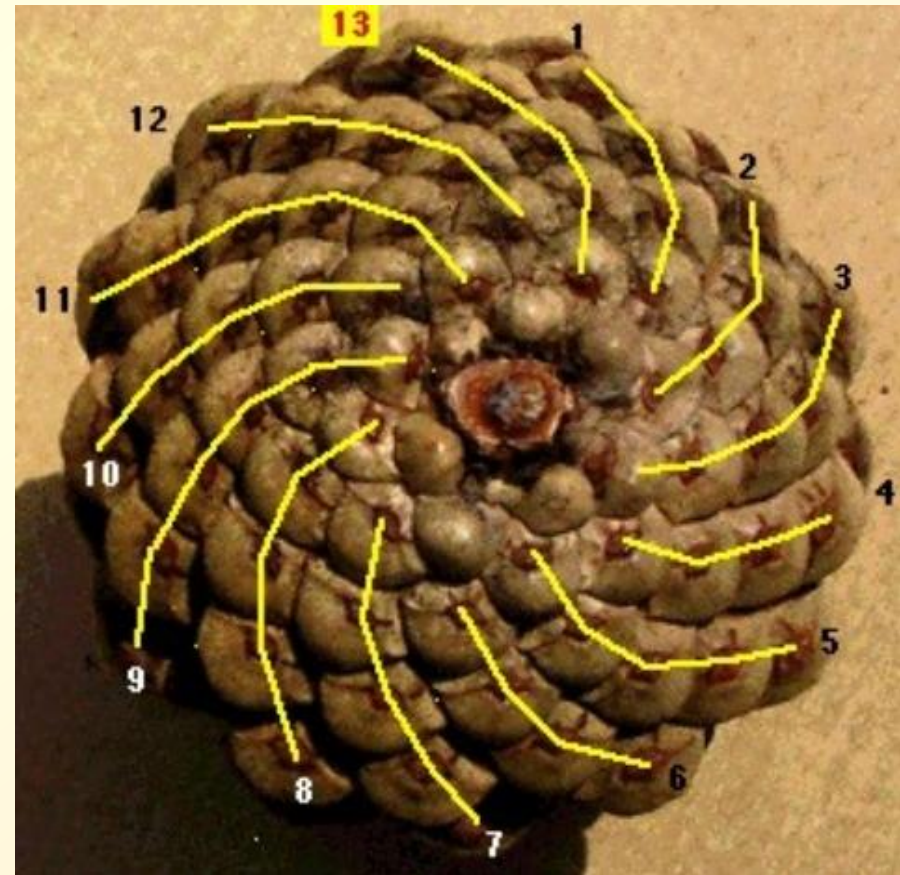
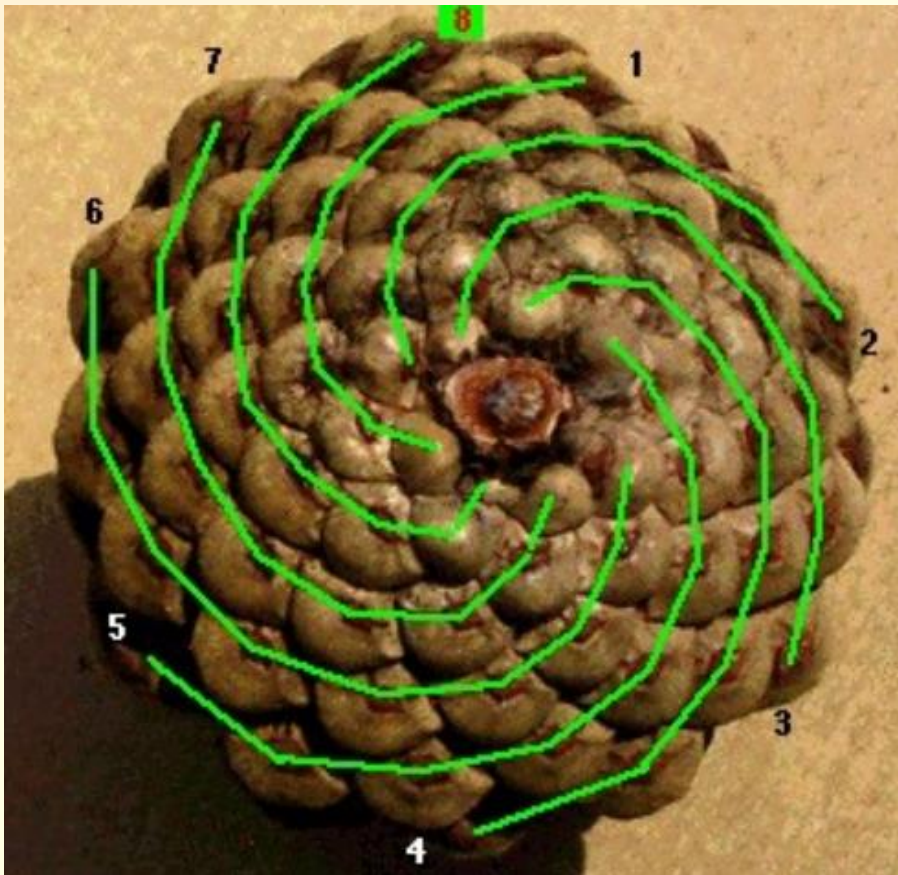


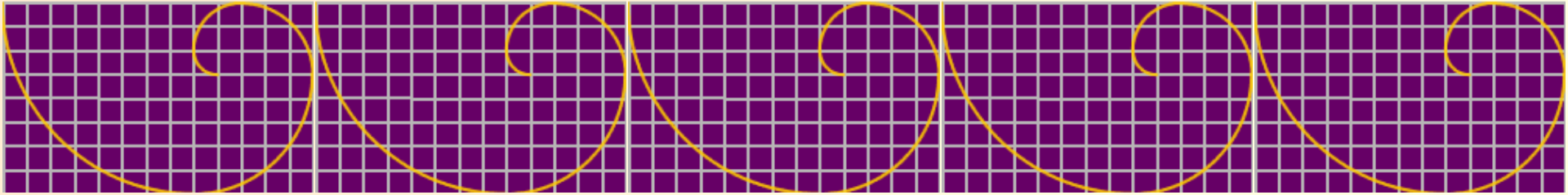
- ☀ Pinecones show how the seeds are spiral packed as well.



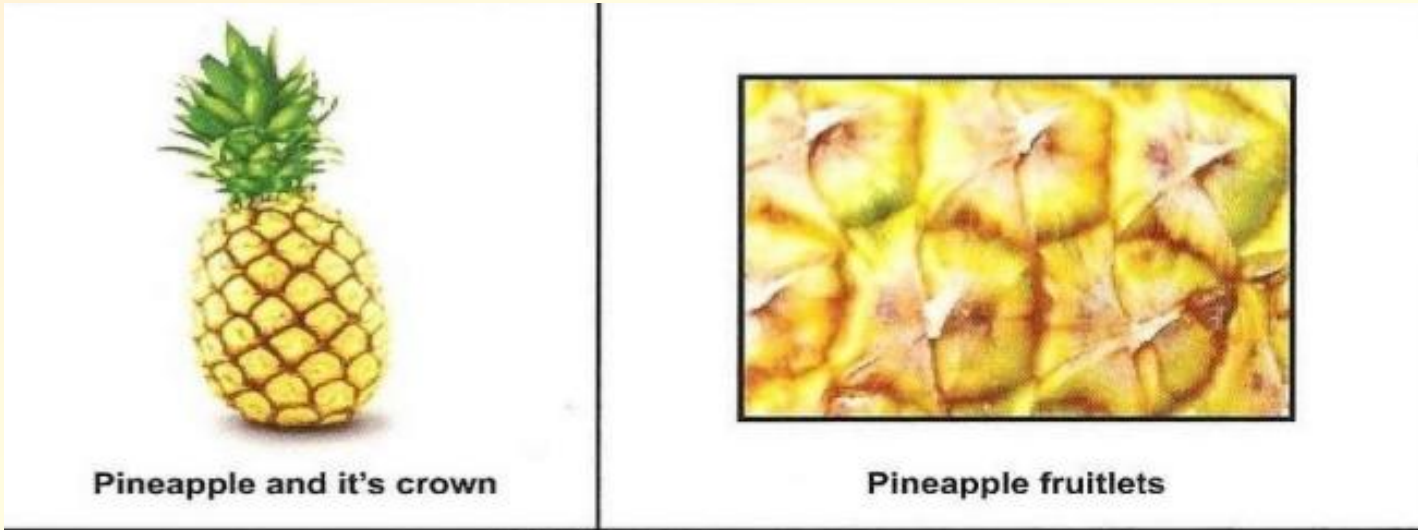


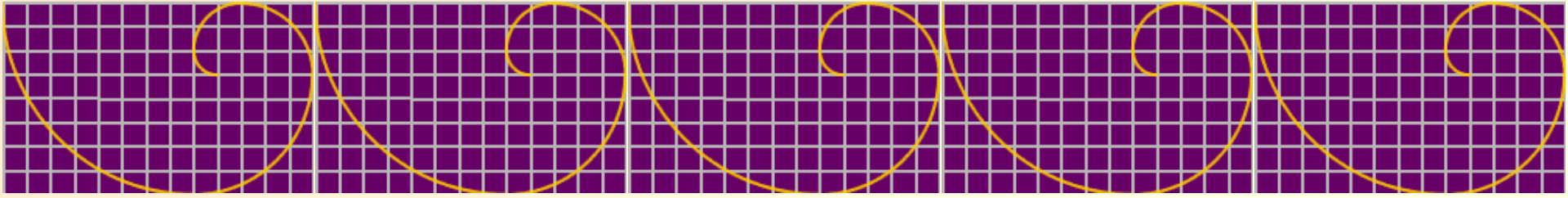
☀ See how the number of seed spirals is always a Fibonacci number.



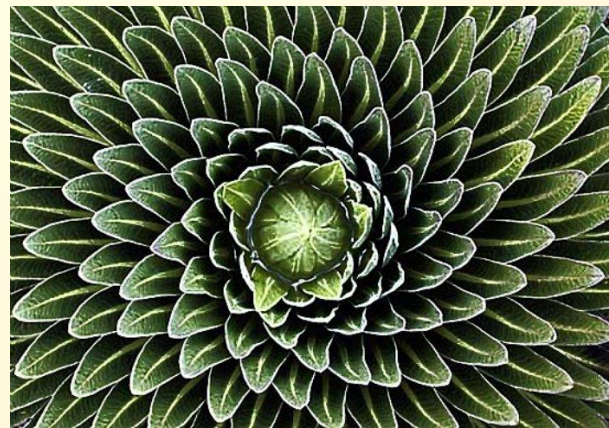


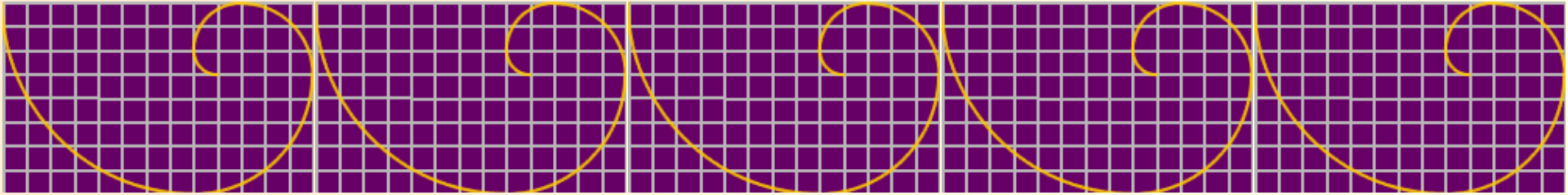
☀ The spirals of a Pineapple



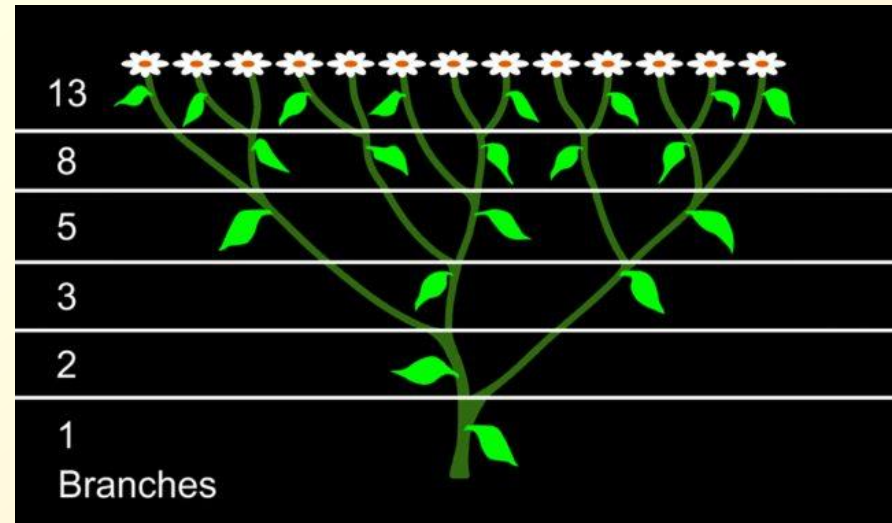
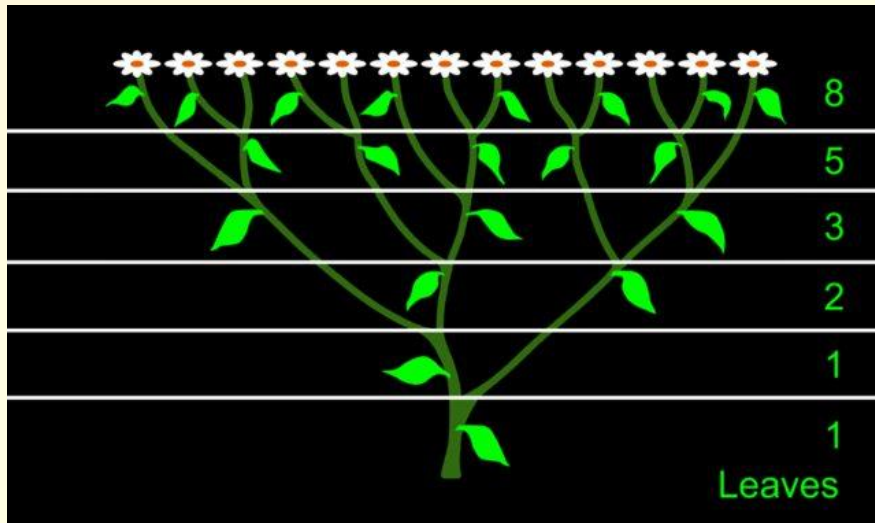


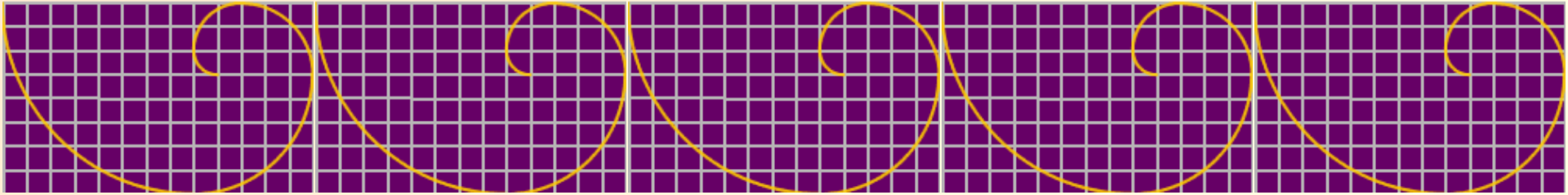
☀ **Most all plants spiral their leaves to make sure they all get equal and maximum light.**





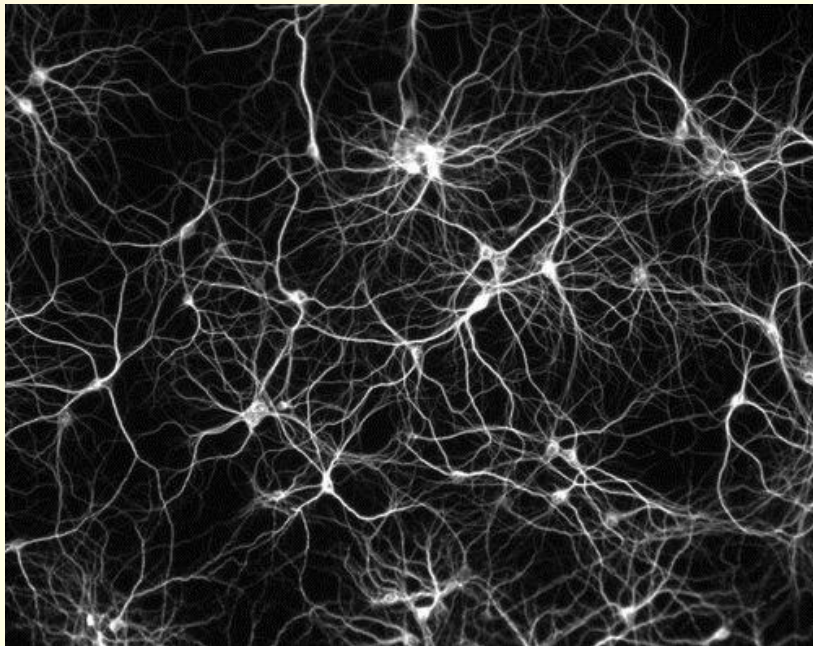
☀ By growing according to Fibonacci numbers, the maximum area can be covered with the minimum growing energy.



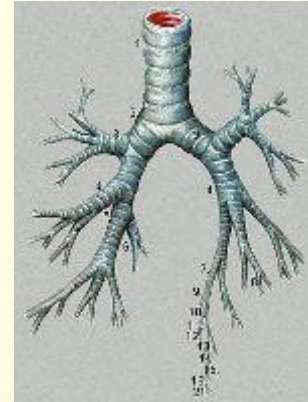
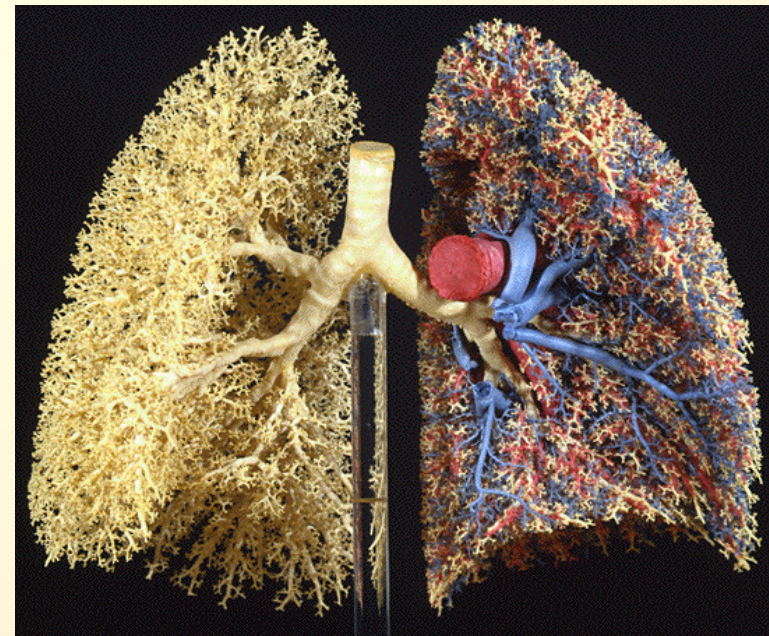


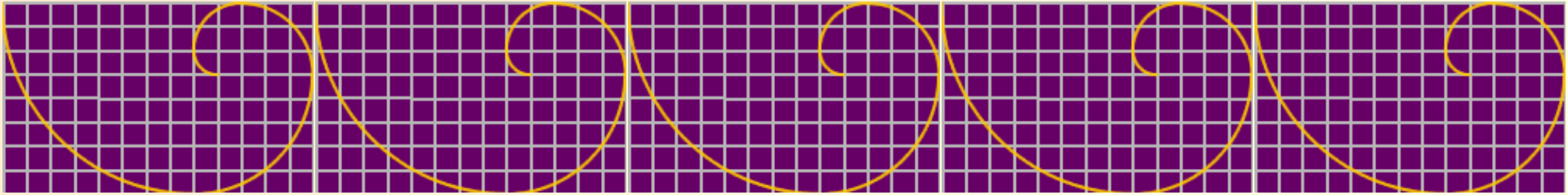
☀ Our bodies use Fibonacci branching for maximum efficiency!

Neurons

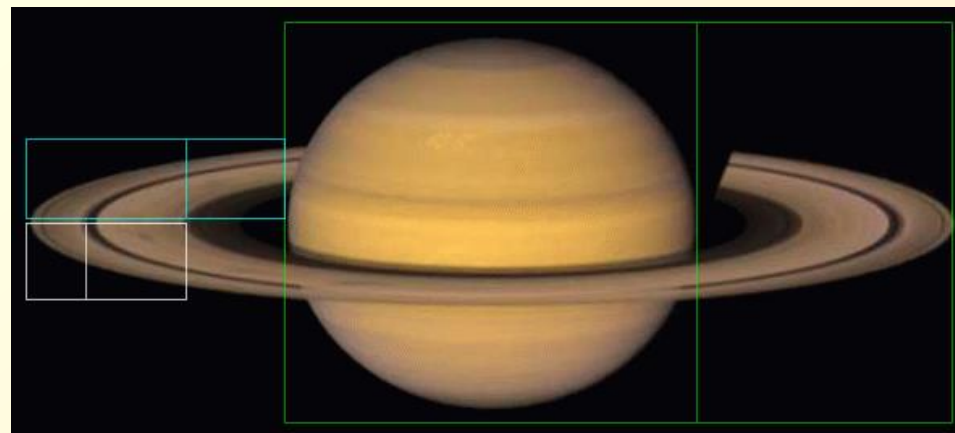
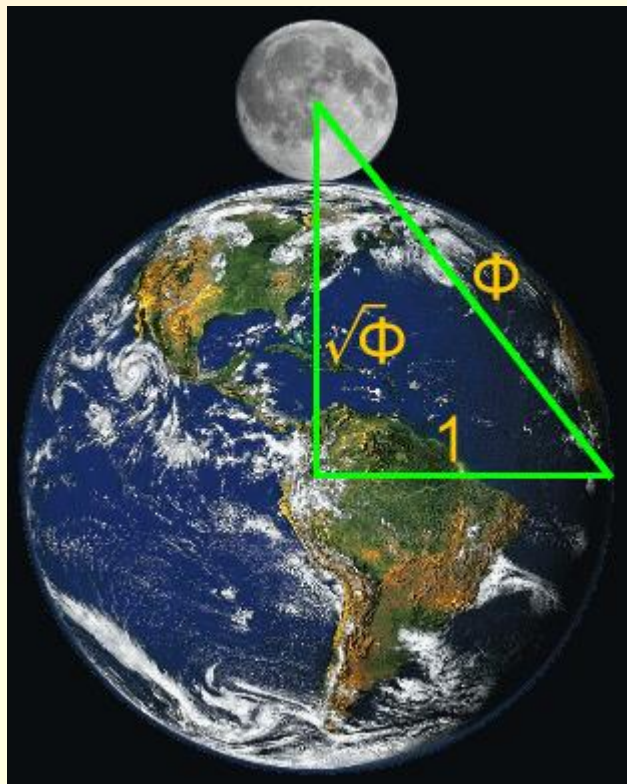


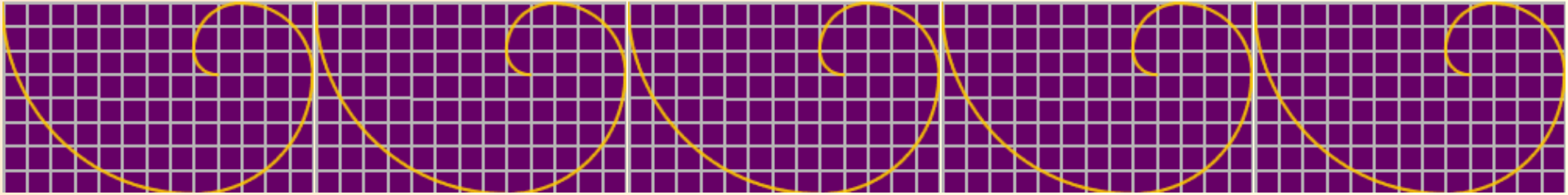
Bronchi





☀ And last, but NOT Least, Fibonacci numbers show up in Space!





☀ Fibonacci math is all around you and in you!

☀ All you have to do is look for it!

☀ Thank You!

☀ Questions

