

Fibonacci Everywhere

Created by Valery Chan



The Fibonacci Series

- a series of numbers in which each number is the sum of the two previous numbers.
- 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...

Sequences and Series

- Infinite series
- Not arithmetic nor geometric

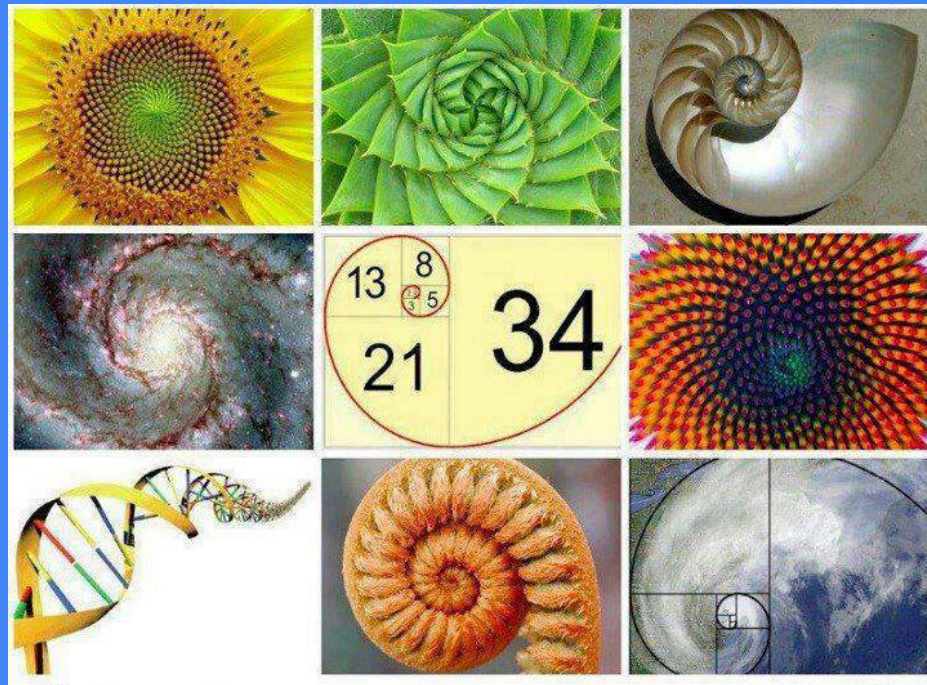
The Recursive Rule is: $\mathbf{x_n = x_{n-1} + x_{n-2}}$

$$x_9 = x_{9-1} + x_{9-2}$$

$$= x_8 + x_7$$

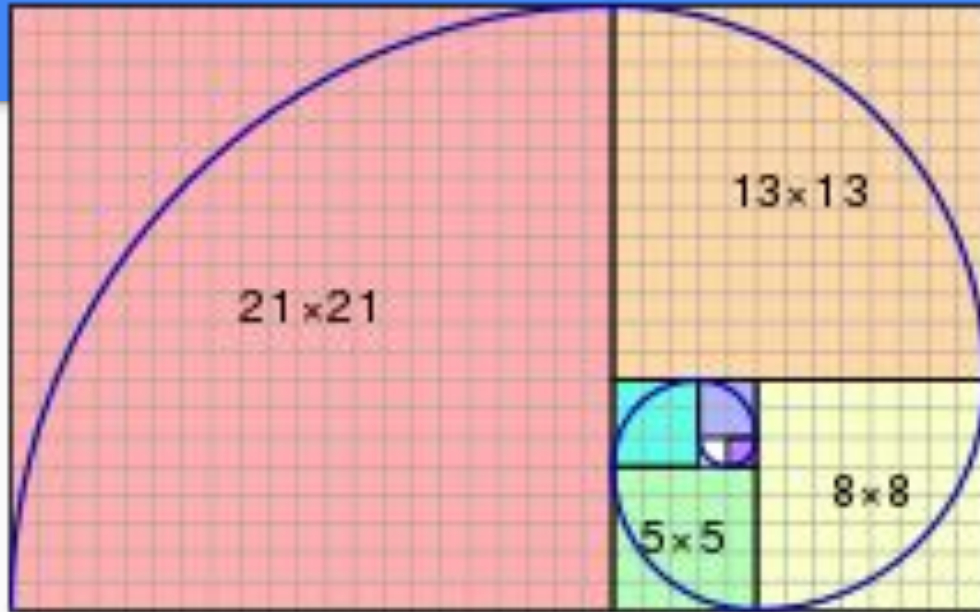
$$= 21 + 13$$

$$= 34$$



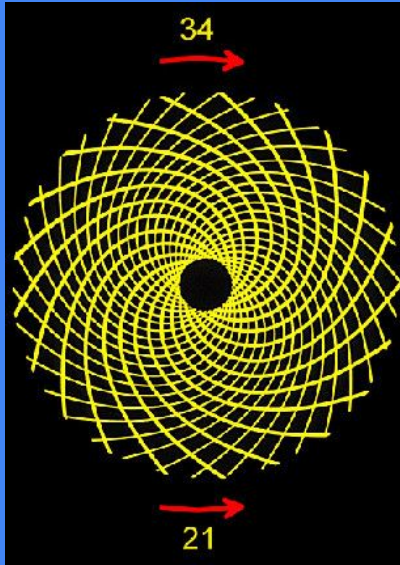
The Fibonacci numbers are found in everything around us.

It makes a SPIRAL...



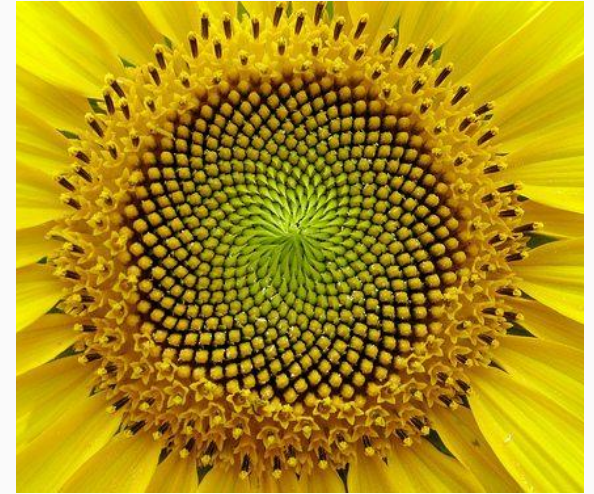
called the GOLDEN SPIRAL!

- Each seed is placed at 0.618034° .
- The number of spirals, tends to match a Fibonacci numbers.



Seed pods on a pinecone

Nature



Seeds in this sunflower

- produced at the center first, and then migrate towards the outside to fill all the space.

Nature cont.

Number of
petals



Lily, 3 petals



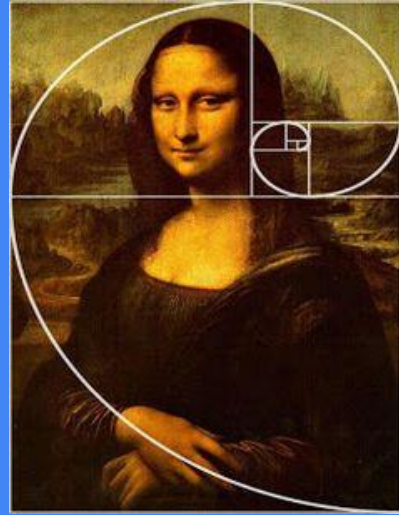
Buttercup, 5 petals



Chicory, 21 petals

Artworks

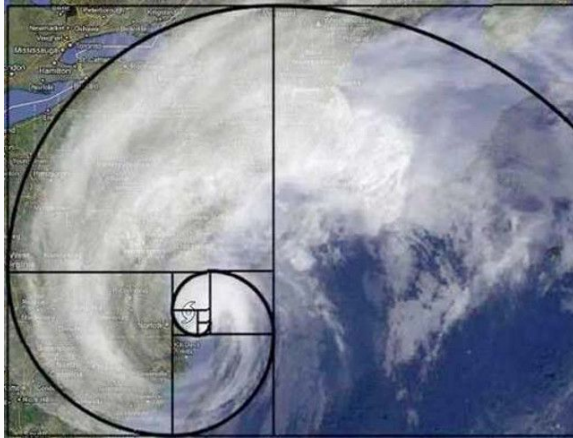
The Mona Lisa →



The Great Wave off Kanagawa →
by Japanese artist Hokusai



Space





Hurricanes



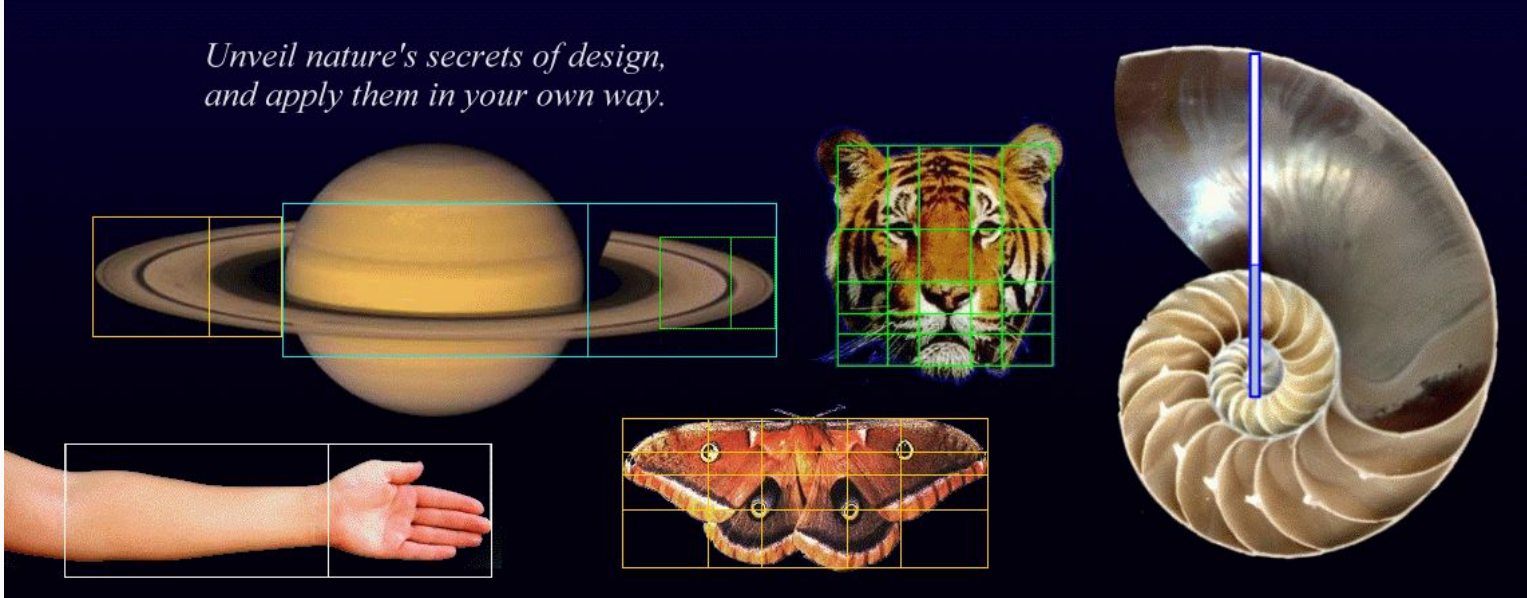
The Milky Way

Golden Ratio

- A ratio based on the fibonacci numbers
-  = symbol for the Greek letter called “phi”
-  ≈ 1.6
- 1, 1, 2, 3, 5, 8, 13, ...
 - $5 \div 3 = 1.666666666667$
 - $8 \div 5 = 1.6$
 - $13 \div 8 = 1.625$

Nature

*Unveil nature's secrets of design,
and apply them in your own way.*

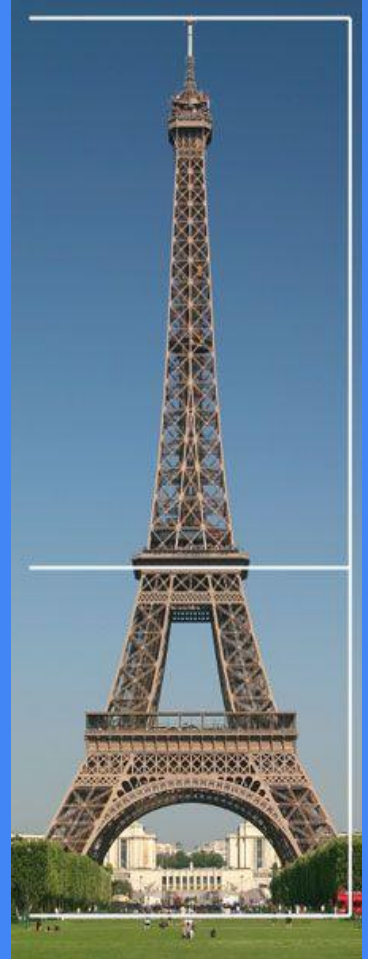


Buildings

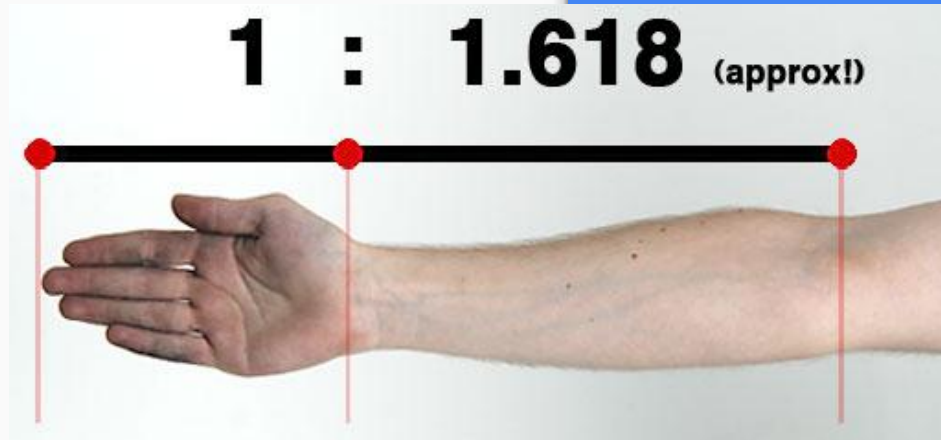


Parthenon in Greece ↑

Eiffel Tower →



Human body



From your forearm to your wrist / wrist to the fingertip = 1.6

**Remember:
Appreciate
math, because
math is in our
everyday life!**



**Thank you for
listening!**