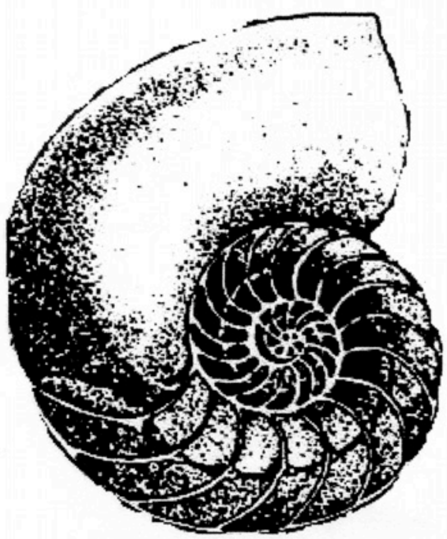
Brittany

Pr.4

5/31/08

phi

ϕ



Phi is simply an irrational number like pi, but with many mathematical properties. Unlike pi phi is a transcendental number and phi is the solution to a quadratic equation. The golden ratio is the sum of those quantities and the larger one is the same as the ratio between the larger one and the smaller. The golden ratio is approximately 1.6180339887· See fig.1 A is to B as B is to C, where A is 161.8% of B and B is 161.8% of A and C is 61.8% of B.

The Egyptians used the golden ratio in their design of their pyramids, the Greeks used it for beauty and balance in their architecture, the renaissances used it for beauty and balance in their design of art. The Egyptians recognized it as "the golden mean"; the Greeks knew it as "division in the extreme and mean ratio" and the renaissance familiarized it as the "divine proportion". The golden ratio is still used today in design, architecture, and art. Not only is the golden ratio man made but it is found in nature as well. It appears in the natural design of human body, the structure of the dolphin's body, and a sea shell, but it is also found in the root of all beings; it's DNA. For example in B-DNA there are two strands (two grooves), with the ratio of phi in the proportion between the major groove and the minor groove. [Insight on B-DNA proportions contributed by Melih Yazici]

There is evidence of humans having comprehension of the golden ratio that dates back to 888 CE in the Byzantine times. The Greek mathematician Euclid then later wrote a book concerning the golden ratio around 300 BCE he discussed this proportion as the "division in the extreme and mean ratio" or "dividing a line in the extreme and mean ratio".

Fibonacci numbers are a series of numbers starting at zero and one; each new number in the series is simply the sum of the two before it. The Fibonacci numbers are very intertwined with the golden section, any given number in the series dived by the prior number is approximately phi=1.618033988.

The golden spiral is a rectangle divided into a square and a smaller rectangle. The sides between the larger and smaller rectangle are completely proportionate thus proving the two triangles similar. The golden rectangle is or can be very repetitive creating a spiral pattern with in a pattern and in theory can be infinite. See fig.2 a/b=(a+b)/a. The golden rectangle is the square and smaller rectangle included with the arc o the spiral. See Fig.3

The golden ratio even exists in literature, preferably poetry. Each syllable in a stanza in "golden poetry" is abiding by Fibonacci series of numbers.

Phi (Fibonacci)

As
phi
is a
mystery
to all too many,
never understanding it all,
maybe Fibonacci poetry is the key, as
it shows the reader how the lines are phi (1.618) times longer than the last.

This is false, but truer the longer the lines are,
as the quotient oscillates towards the Golden number. I have poetic lisence.

September 6th, 2006

Pyramids

If one divides the Great Pyramid's perimeter by its height, one indeed obtains a very good approximation to 2&pi.

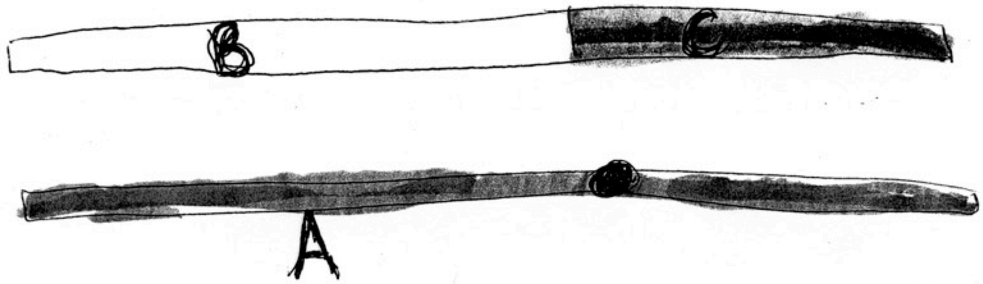
If that the slope of each face of the Great Pyramid is very close to 4/&pi=1.273239

The Egyptian measurement system involves dividing one unit of measurement (the cubit) into 7 equal units (palms)

The rational number 22/7 happens to be an excellent approximation to the number pi.

Fig.1

PHI Φ

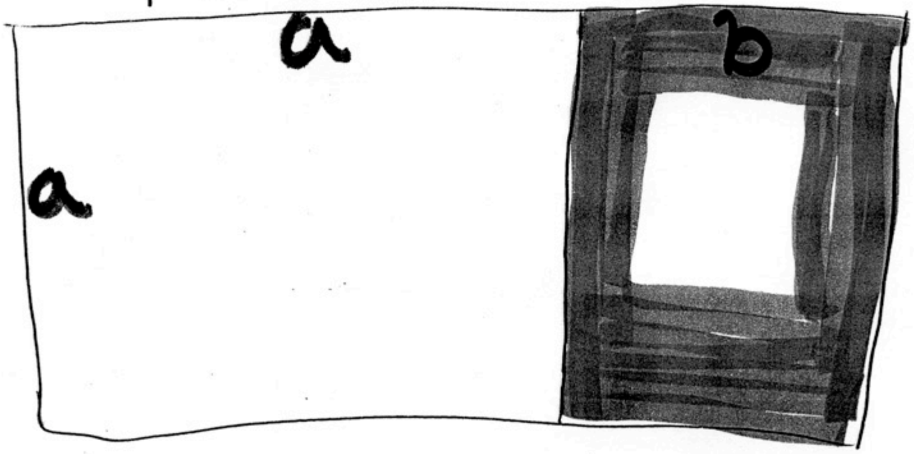


$$A = B + C$$

The same as $A/B = B/C$

A is to B as B is to C, where A is 161.8% of B and B is 161.8% of A and C is 61.8% of B φ Golden ~~rectangle~~ spiral

Fig 2



$$a/b = (a+b)/a$$

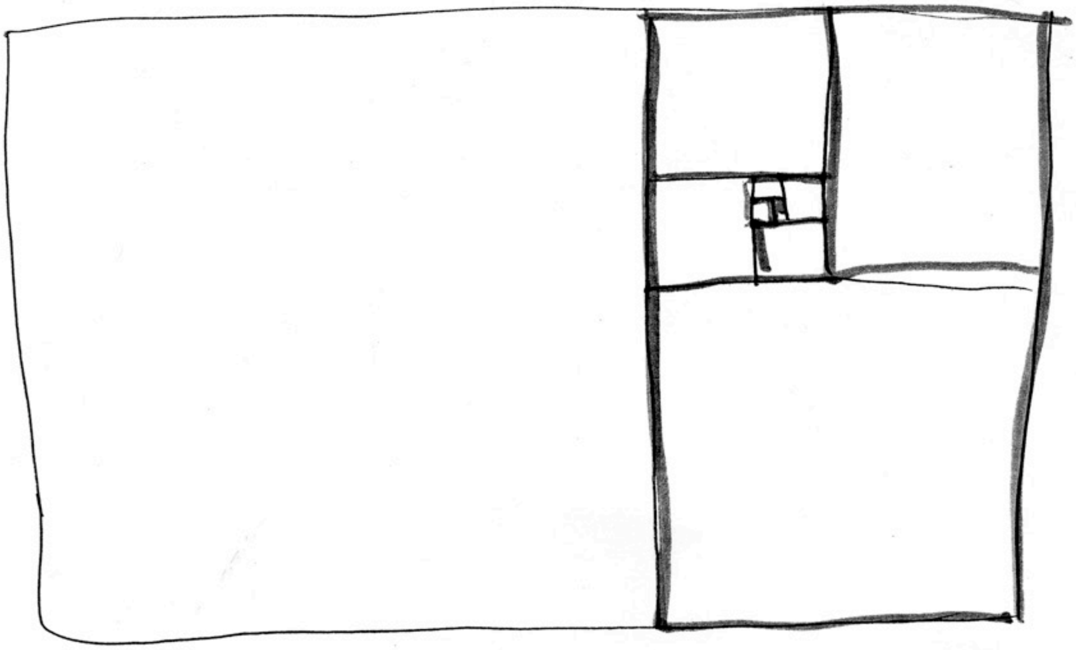
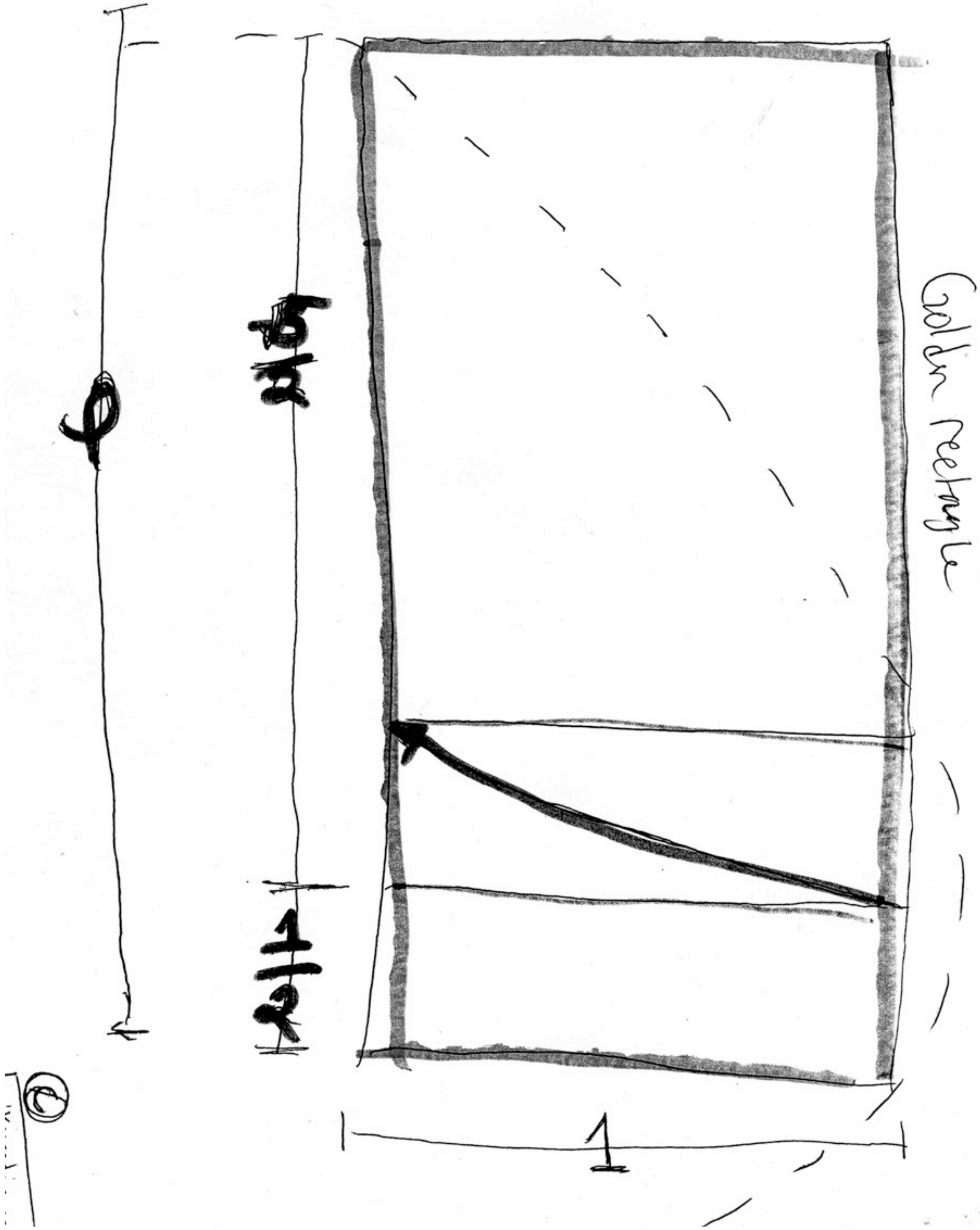


Fig 3.



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