

TRADURRE IN ITALIANO IL TESTO SEGUENTE:

### The Golden Section

The diagram below shows two lines, AC and CB

A ----- C ----- B

which when put together can be regarded as one line called AB. The ratio of the line AC to CB is the **Golden Section** if it is exactly the same as that of the line AB to AC.

In a maths equation form, this can be represented as  $AC/CB = AB/AC$ . If the length of the line AB is 1, it is possible to work out the length of AC (which we represent as  $x$  for unknown). Substituting this into the above equation, we get  $x/(1-x) = 1/x$ . Multiplying both sides by  $x(1-x)$  gives  $x^2 = 1-x$ , which is the same as  $x^2 + x - 1 = 0$ . We can now solve the equation:  $x = (\sqrt{5} - 1)/2 = 0.61803398875\dots$ . The reciprocal of the Golden Section is  $1.61803398875\dots$ : the numbers after the decimal point are exactly the same!

One way to find out the actual value of the Golden Section is related to a Fibonacci sequence of numbers. Other examples of number sequences include prime numbers and perfect numbers. Each number in a Fibonacci sequence is the sum of the two numbers preceding it. The simplest Fibonacci sequence starts with the numbers 0 and 1. From then on, it's just a matter of adding these to build up the sequence:

0+1=1; 1+1=2; 2+1=3; 3+2=5; 5+3=8; 8+5=13; 13+8=21; 21+13=34; ...

If you take any two adjacent numbers from the sequence (say, 13 and 21) and divide the lower one by the higher one (so  $13/21$ ), you'll get an approximation of the Golden Section correct to two decimal places. The higher numbers you use from the Fibonacci sequence, the more accurate answer you will get. For instance, dividing 6765 by 10946 will get it correct to eight decimal places.

The use of the Golden Section proportion has been a great interest to both artists and mathematicians through the whole of history. The Greeks believed that the perfect face had a ratio of top-of-hair to eyes and eyes-to-chin, which was the same as the ratio of eyes-to-chin to the whole of the head.

It's was not just the face, the rule could apply to the whole body. In this case, the ratio of head to waist and waist to feet being the same as the ratio of waist to feet and the entire body height. This example of a perfect body is used in Leonardo Da Vinci's famous drawing "Vitruvian Man".

TRADURRE IN INGLESE LE FRASI SEGUENTI:

1. La Sezione Aurea è un concetto molto importante in architettura.
2. Il rapporto di due numeri di Fibonacci consecutivi può dare un'approssimazione molto accurata della Sezione Aurea.
3. La soluzione positiva dell'equazione  $x^2 + x - 1 = 0$  è il valore esatto della Sezione Aurea.
4. La successione di Fibonacci dipende dai primi due valori.
5. Quante cifre decimali corrette otteniamo da  $13/21$ ?