

Golden Ratio

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Introduction

What if I told you that mathematical concepts play a significant role in everything that appears to be beautiful? You will be amused to know that math actually helps you to see the beauty in things. Research says that mathematical patterns in every face, structure and design make something look attractive to your eye. Wondering how? There is a mathematical concept called the Golden Ratio.

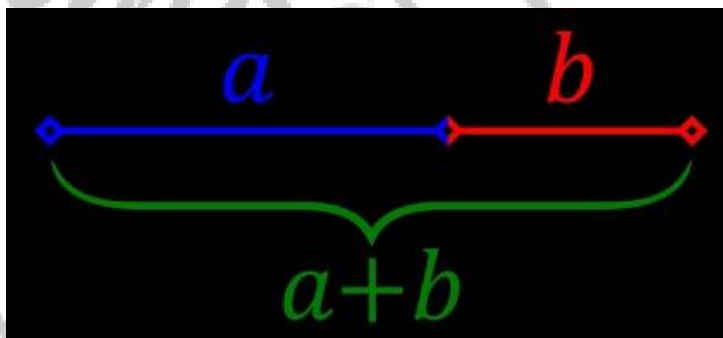
Why is it termed the “GOLDEN RATIO”?

The length-to-width ratio is a special number 1.618. This has been found most attractive to the eye throughout the history and that’s why Greeks coined the term “Golden Ratio” to describe this proportion.

How exactly is the Golden Ratio formed?

To understand this in mathematical terminology, let’s consider a line and divide it into two parts such as the ratio of the length of the longer part say “a”, to the length of the shorter part say “b” is equal to the ratio of their sum “(a+b)” to the longer length “a”. This ratio is often denoted by the Greek letter ϕ (“phi”).

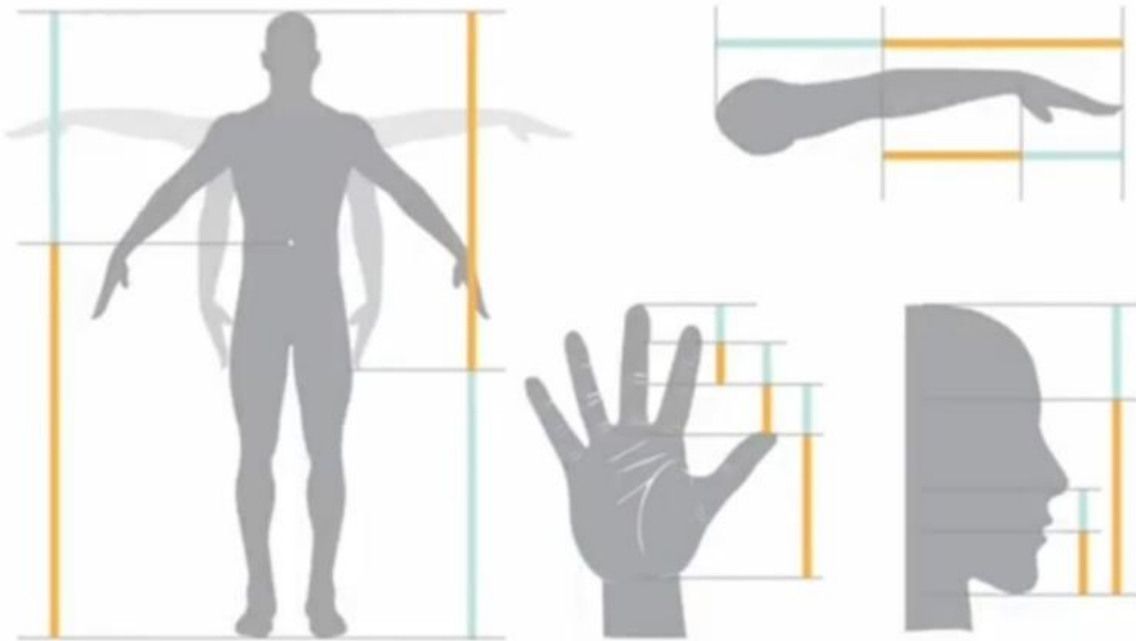
$$\frac{a}{b} = \frac{a+b}{a} = \phi$$



The approximate value of ϕ is equal to 1.61803398875...

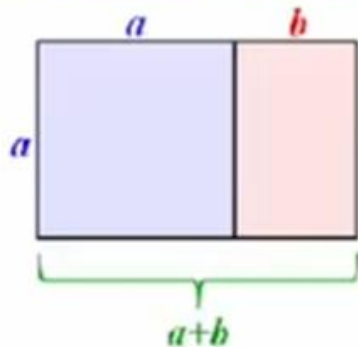
Did you know the pattern of the golden ratio can be seen in all of us? That’s right. The body of each individual is different. Yet the human features form a certain ratio. The features of the average population however form the golden ratio which is considered the most appealing. As an example, the most beautiful smiles are those on which the front teeth known as incisors needed to cut food are 1.618

wider than the ones at the back. You can similarly use the same formula for other parts and features to check if they follow the golden ratio.



Golden Ratio and Geometry

The Golden Rectangle



$$\frac{a}{b} = \frac{a+b}{a} = \Phi$$

$$= 1.61803\dots$$

If you use the golden ratio to create a shape with proportional sides and length being 1.618 times the size of the width, it would form the golden rectangle. Artists and architects believe that this rectangle is one of the most pleasing and beautiful shapes.

History of Golden Ratio

The golden ratio was first described by the Greek mathematician Euclid around 2300 years ago. It is an irrational number like π . It is also known as the Golden Section, Golden Mean or Divine Proportion.

Is the Golden Ratio Used Today?

Yes, it certainly is. Artists and Designers use the golden ratio to create everything from product to brand logos. Researchers also use the golden ratio in fields of Energy physics, Architecture, Cryptography and Quantum mechanics. Also, it can be seen in nature such as Flower petals, Shells, Fruits and Vegetables, Tree Branches, Spiral galaxies, Faces, Animal bodies etc.

Conclusion

It is amazing to know how Math is used unknowingly especially to make things look beautiful to our eyes.

