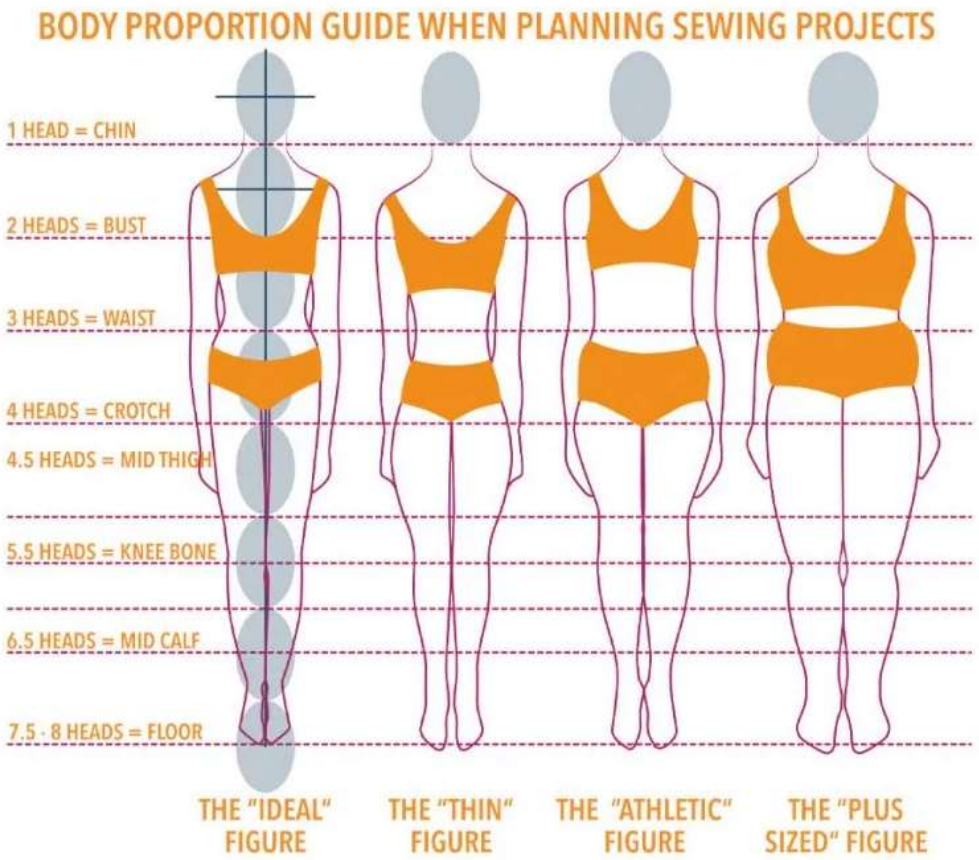
Body proportion

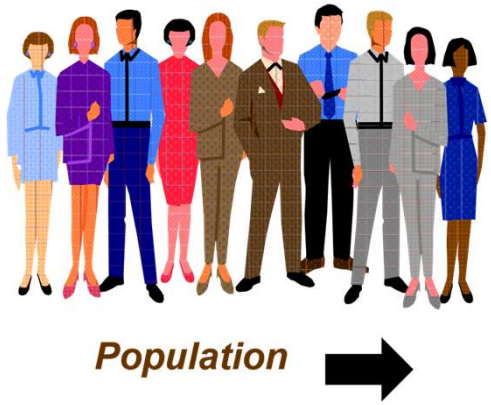


[2]

Why do clothing sizes differ from one brand to another, although their sizing guides typically follow the same sets of measurements?

It depends on a relatively high degree of our knowledge of the relations existing between body dimensions of the population, so-called body proportions.

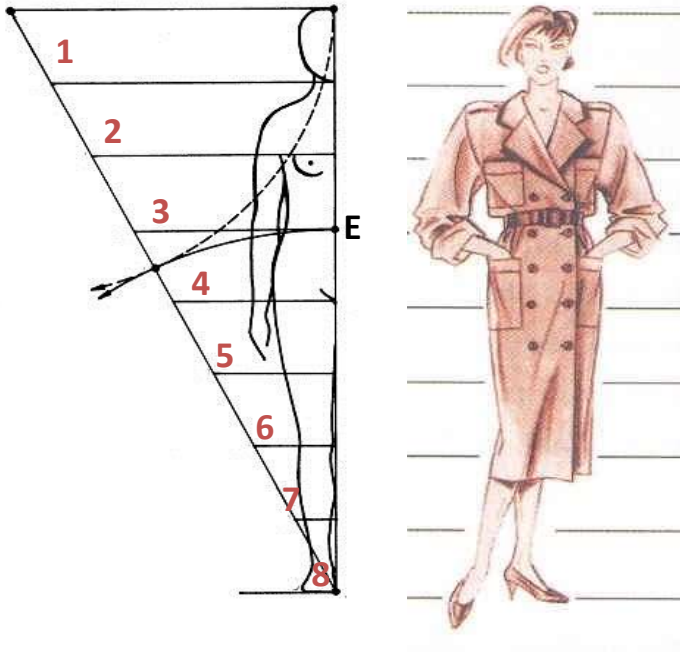
The value of one body dimension is calculated as a percentage of another dimension. Clothes will always fit differently from person to person.



How we can characterised proportion?

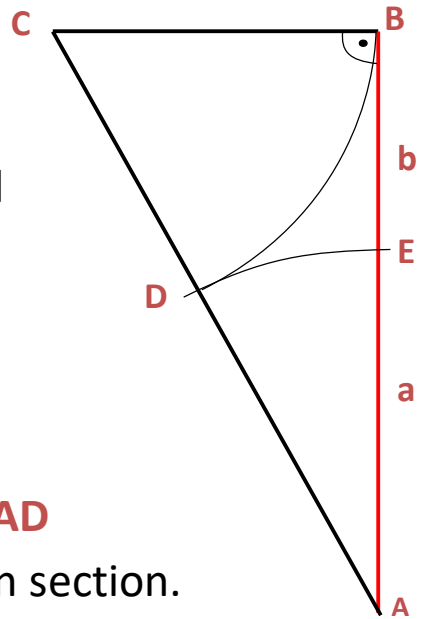
The relationship of one body part to a whole or to other body parts.
Two concepts which are useful in representing human body proportions:

Division into Eighths



Ideal proportion for clothing [1]

The Golden Section (Golden Mean)



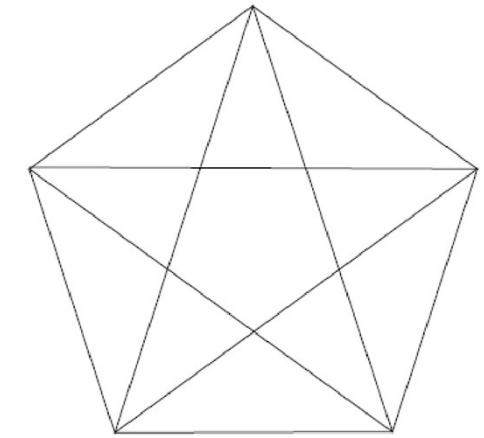
Construction of the golden section:

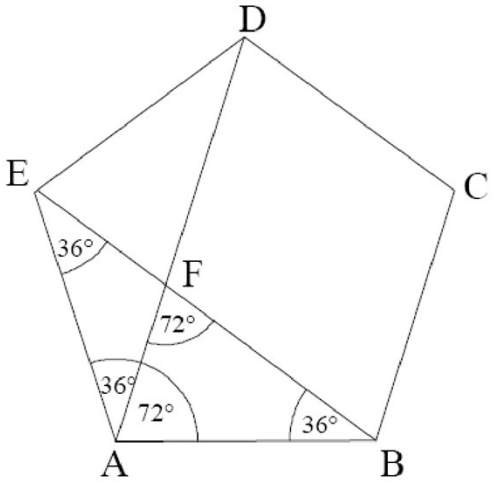
1. The perpendicular **BC** is erected at **B**, with **BC = ½ AB**
2. **C** is joined to **A**
3. **D** is marked on **CA** so that **CD = CB = ½ AB** 4.
4. **E** is marked on **AB** so that **AE = AD**
5. **E** divides **AB** according to golden section.

$$\frac{(a+b)}{a} = \frac{a}{b} = \varphi \text{ (golden number)} = 1.6180339887$$

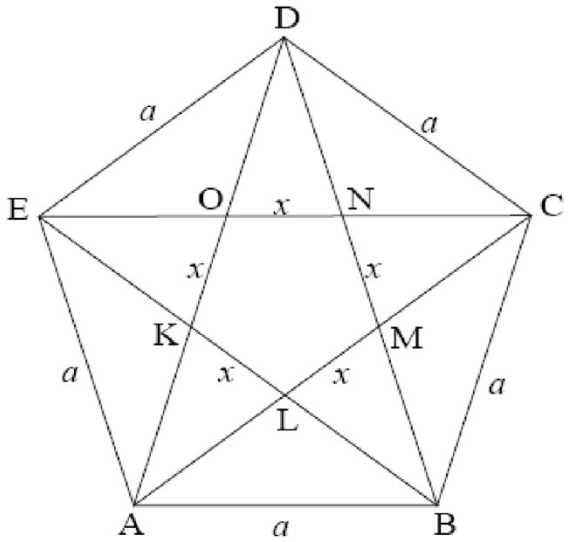
Principle:
The whole line (a+b) is to the larger section (a) **Major**
as larger section (a) is to the shorter section (b) **Minor**

Regular pentagon





Five-pointed star in a pentagon

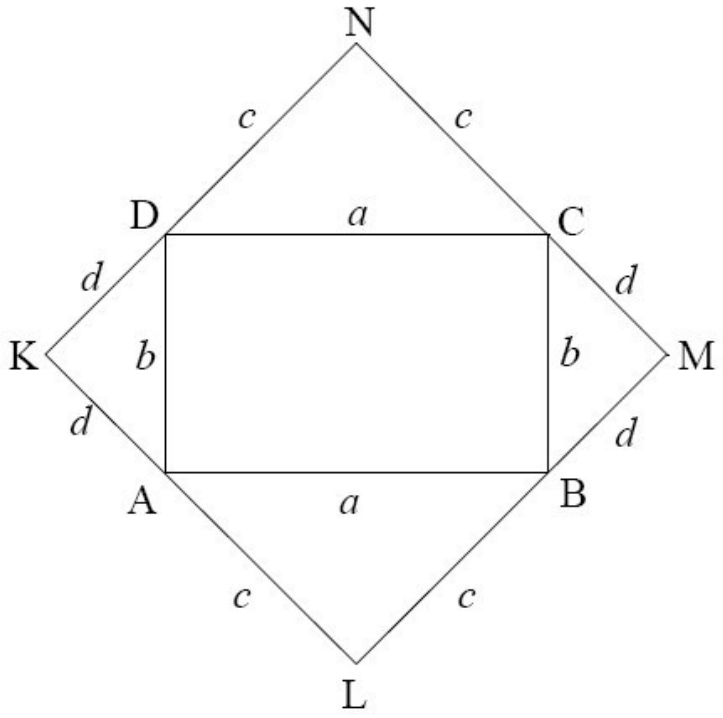


The ratio of the lengths of the diagonal to the side of the pentagon is gold φ

Golden rectangle

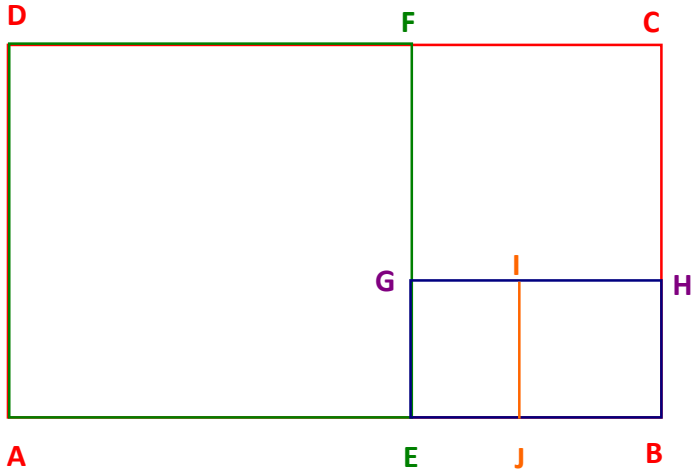
Golden rectangle

$\Rightarrow$ a rectangle whose sides are in a ratio φ
can be inscribed in a square so that all its vertices are divided by the sides of the square in a gold ratio

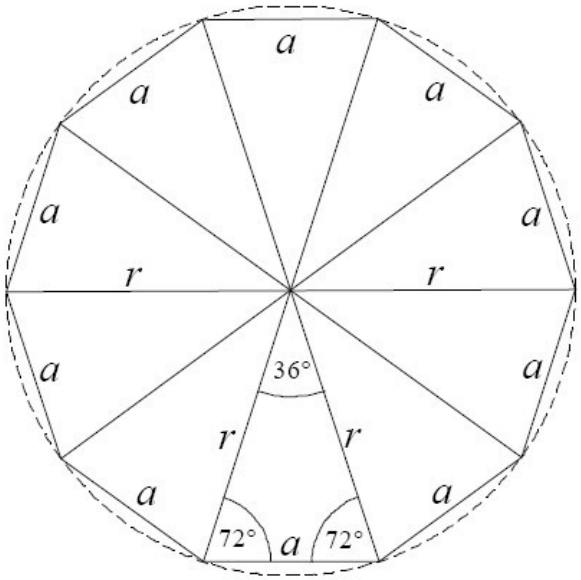


Golden rectangle inscribed in a square

If we separate from the golden rectangle ABCD square AEFD, the remainder will again be a golden rectangle; if from a rectangle EBCF we separate the square GHCF will be the rest EBHG again a golden rectangle, etc.

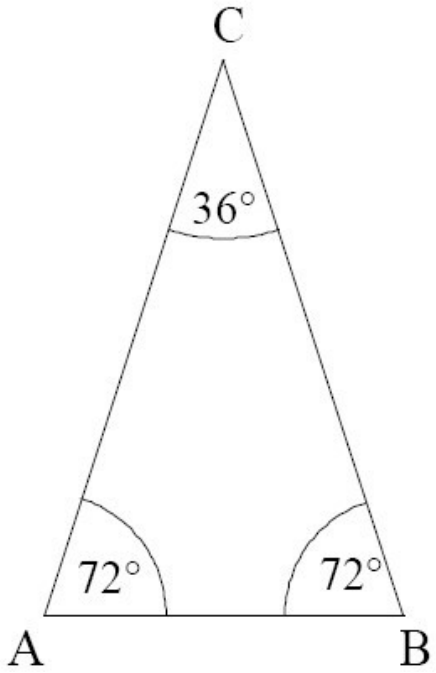


Golden decagon



$$\frac{r}{a} = \varphi$$

Golden triangle



$$cos(\alpha) = \frac{\frac{1}{2}}{\frac{1+\sqrt{5}}{2}} = \frac{1}{1+\sqrt{5}}, \qquad \text{thus } \alpha = 72°$$

Golden number

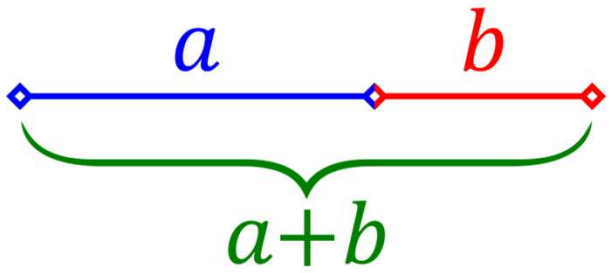
Leonardo Fibonacci

Leonardo Fibonacci discovered the sequence which converges on φ (phi).

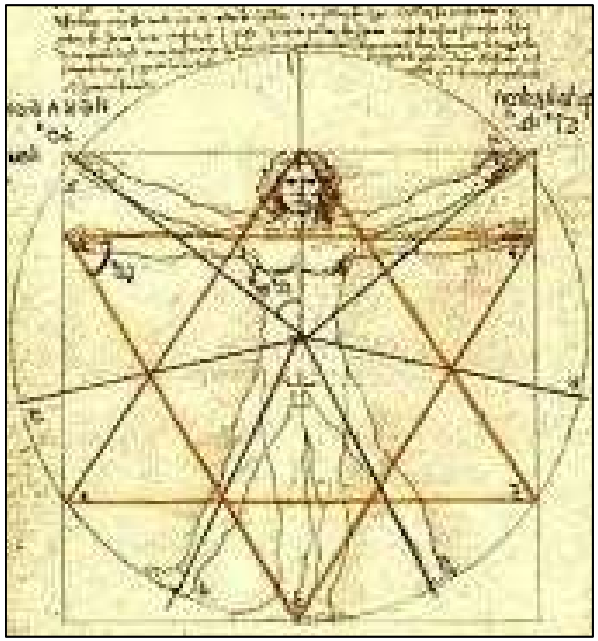
0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, . . .
Each new number in the sequence is simply the sum of the two before it. [2]

Golden Ratio in Art and Architecture

$$\frac{(a+b)}{a} = \frac{a}{b} = \varphi \text{ (golden number)} = 1.6180339887$$



$a+b$ is to a as a is to b



The Vitruvian Man („The Man in Action“)
by Leonardo Da Vinci

Reference

[1] EBERLE,H. *Clothing technology*. Europa Lehrmittel Verlag, 2008. ISBN 13: 978-38085622.

[2] Tokens, E. Understanding Body Proportions. In: The Creative Curator [online]. 7.7.2022 [cit. 14.4.2023]. Dostupné z: https://www.thecreativecurator.com/understanding-body-proportions/