

The topic of the infographic is Mathematics in Architecture, which consists of two parts: “How Mathematics makes buildings more stable” and “How Mathematics makes buildings more beautiful in shape” .

The first part is about the use of triangles. Being the strongest shape among all geometric shapes, triangles are commonly used in buildings. For example, trusses are structures commonly seen in bridges. The main reason is because they are rigid. Unlike other polygonal structures, they would not change their shapes even under force. When a force is applied, it is distributed to the two sides and the remaining side is stretched. Therefore, the shape is still stable. However, other polygons are not that rigid and would be easily compressed when force is applied (for example, rectangles would be compressed into parallelograms).

The second part is about how Golden Ratio were found in architectures. The Golden Ratio is an irrational number approximately equal to 1.618 and satisfies the equation $\Phi^2 - \Phi - 1 = 0$. The Golden Ratio is considered beautiful and can be seen in a number of buildings like the Great Pyramid of Giza. The Pyramid has a base of 230.4 m and a height of 146.5 m, which has a height-to-base ratio of 0.636 and is in the shape of a Golden Triangle (a Golden Triangle is a right-angled triangle with base-to-height-to-hypotenuse ratio equals $1 : \sqrt{\Phi} : \Phi$, such that the three side lengths would satisfy the equation $\Phi^2 - \Phi - 1 = 0$ due to the Pythagoras' Theorem).

Furthermore, the Golden Ratio is related to the Fibonacci sequence, in which the first two terms are 1 and starting from the third term each term equals the sum of the two previous terms. The ratio between every two consecutive terms approaches the Golden Ratio. The numbers in the sequence form the Fibonacci Spiral, which can be seen in the nature.