MATHEMATICS IN ARCHITECTURE

Maths in architecture

Mathematics creates a solid base for every building. Architects use it all the time. In order to create a design, one has to use a scale. Then, one has to take into account the real dimensions. The stability and durability of a building often depend on many mathematical calculations.

On the next slide you can see some examples of the implementation of Mathematics in architecture.

Paving stone - symmetry

Rosette,
- symmetry

Egyptian pyramids
- pyramids

Blocks of flats
- cuboids

Fountain – a sphere

Tower -
cylinder

SOME INFORMATION ABOUT PYRAMIDS

The Pyramids in Giza

The biggest pyramid – the tomb of the pharaoh Cheops – was erected as the first one in Giza. Over centuries it has been mostly intact and is now one of the seven wonders of the world. It is made-up from 2,5 million of stone blocks which altogether weigh 6 million of tones. Each stone block weighed from 3 to 80 tones.

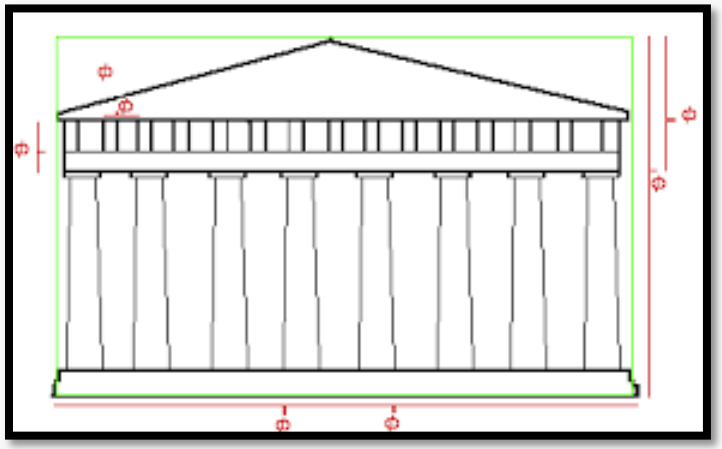
Interesting facts about the Cheops pyramids:
- if you multiply the altitude of the pyramid by 1000 000 000, we will get the average distance from the Earth to the sun.

-the angles of the pyramid divide the delta of the Nile into two equal parts.

-foundations of the pyramid are very unique because over 5000 years it has settled only 1 cm in the ground.

Divine (golden) ratio

It is the division of a segment into two parts in the way that It is the ratio of a line segment cut into two pieces of different lengths such that the ratio of the whole segment to that of the longer segment is equal to the ratio of the longer segment to the shorter segment.



Buildings with geometric shapes

Parthenon, (448-432 p.n.e.)was dedicated to the goddess Athena. Its decorative sculptures are considered some of the high points of Greek art. Many of Parthenon's proportions approximate the golden ratio.

The Leaning Tower in Piza (cylinder)

The Leaning Tower in Piza is one of the best-known buildings in the world. It is visited by around 10 million of tourists every year. It's the symbol of the city of Piza. In fact, it is a bell tower of the cathedral complex in the Roman style at the Campo dei Miràcoli.

The Eiffel Tower

The Eiffel Tower is the most popular tourist attraction in Paris, also known as one of the symbols of France. It's the tallest building in Paris and the fifth tallest building in France.

„The Iron Lady" is located in the western part of the city centre, upon the Seine river.

Axis of symmetry is a line that divides an object into two equal halves, thereby creating a mirror-like reflection of either side of the object.

THE AXIS OF SYMMETRY IN POLISH BUILDINGS

The Palace of Culture and Science in Warsaw

The Presidential Palace in Warsaw

THE AXIS OF SYMMETRY IN BUILDINGS KNOWN WORLDWIDE

The Taj Mahal - India

The Notre - Dame Cathedral - Paris

The End

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