

Date: 13th May-2025

THE IMPORTANCE AND PRACTICAL APPLICATIONS OF GEOMETRY IN REAL LIFE

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Annotatsiya: Mazkur maqolada geometriya fanining real hayotdagi, xususan, qurilish sohasidagi amaliy ahamiyati tahlil qilinadi. Har xil geometrik shakllarning inshootlarni loyihalash va qurishda tutgan o'rni, shuningdek, geometrik o'lchashlarning nazariy asoslari yoritiladi. Misollar orqali uchburchak, to'rtburchak, aylana va boshqa shakllarning barqarorlik, mustahkamlik hamda funktsionallikka ta'siri ko'rsatiladi. Geometriyaning texnika, san'at, dizayn va kundalik hayotdagi qo'llanilishi ham batafsil yoritilgan.

Abstract: This article analyzes the practical significance of geometry in real life, particularly in the field of construction. It highlights the role of various geometric shapes in architectural design and construction, along with the theoretical foundations of geometric measurements. Through examples, the stability, strength, and functionality provided by shapes like triangles, rectangles, and circles are demonstrated. The paper also discusses the application of geometry in technology, art, design, and everyday life.

Аннотация: В данной статье рассматривается практическое значение геометрии в реальной жизни, особенно в строительной сфере. Освещается роль различных геометрических форм при проектировании и возведении сооружений, а также теоретические основы геометрических измерений. На примерах показано, как такие формы, как треугольник, прямоугольник и круг, обеспечивают устойчивость, прочность и функциональность конструкций. Также подробно рассматриваются применения геометрии в технике, искусстве, дизайне и повседневной жизни.

Kalit so'zlar: Geometriya, qurilish, geometrik shakllar, uchburchak, to'rtburchak, aylana, trapetsiya, o'lchash, yuzani hisoblash, hajm, invariantlik, additivlik, muhandislik, dizayn, kundalik hayot.

Keywords: Geometry, construction, geometric shapes, triangle, rectangle, circle, trapezoid, measurement, area calculation, volume, invariance, additivity, engineering, design, daily life.

Ключевые слова: Геометрия, строительство, геометрические формы, треугольник, прямоугольник, круг, трапеция, измерение, вычисление площади, объём, инвариантность, аддитивность, инженерия, дизайн, повседневная жизнь.

Geometry is a vital branch of mathematics that studies space, shapes, and their mutual relationships. Since ancient times, it has become an integral part of human activity. Initially, geometry emerged from practical needs such as land measurement, construction of buildings, and observation of celestial bodies. Today, it has evolved into a discipline with strong theoretical and practical foundations, widely used in science, engineering, architecture, design, and everyday life.



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Geometry plays a crucial role in the construction sector, as the design and construction of any structure rely heavily on geometric shapes and calculations. Every building, road, bridge, or engineering structure is based on certain geometric forms, and their durability, aesthetics, and functionality are directly related to these forms.

For instance, rectangles are widely used in building walls, window and door frames, and floor layouts due to their space-efficient nature. Triangles are especially valued for their stability. Triangular components are extensively used in metal frameworks, roofs, bridges, and various engineering structures, as they distribute loads evenly and provide structural integrity.

The circle is commonly used in architectural elements such as domes, columns, and decorative parts. Additionally, it possesses acoustic properties and is often employed in public spaces such as theaters and mosques to enhance sound distribution. Trapezoids are used in stairs, roof elements, and bridge supports. Cylinders, cubes, and cones are applied in the design of water towers, pillars, and storage facilities due to their strength and capacity.

Theoretical Foundations of Geometric Measurement

An essential component of geometry is geometric measurement, which involves determining and calculating the length of a line, the measure of an angle, or the area or volume of a shape. These measurements are based on the concept of dimension, where each figure is evaluated using standard measurement units (e.g., meters, centimeters, square meters, cubic meters).

Geometric measurements rely on two key properties:

Invariance – the measurement of a shape does not change when it is relocated.

Additivity – the total measurement of combined figures equals the sum of their individual measurements.

If a measurement can be determined in a finite number of steps, the result is a rational number. For example, the area of a square can be accurately calculated using its side lengths. However, in some cases (e.g., the diagonal of a square with a side length of 1), the measurement cannot be expressed as a rational number. In such situations, Archimedes' axiom is applied: first, the measurement is approximated, and then the measurement units are infinitely subdivided, transitioning to a limit. This method is used to define the dimensions of curved lines and surfaces, such as the circumference of a circle or the volume of a sphere.

Geometry is not limited to construction or architecture. In engineering, the components of machines and mechanisms are designed based on geometric drawings. In art and design, symmetry, balance, and composition of shapes give rise to aesthetic works. In modern fields such as computer graphics, artificial intelligence, robotics, and aerospace technology, geometry serves as a fundamental scientific platform.

Even in daily life, people apply geometric thinking either directly or indirectly—for example, in furniture arrangement, room decoration, garden planning, or route selection, all of which rely on measurement and spatial reasoning.



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Geometry is not merely a collection of theoretical knowledge but a practical science with significant importance in real life. It is extensively used in engineering, architecture, technology, art, and daily tasks. In particular, geometric shapes and measurement methods serve as essential tools in the field of construction. Therefore, geometry is an indispensable source of knowledge for every student, scholar, and professional.

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