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MATHEMATICS IS THE QUEEN OF SCIENCES

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In the 17th century, the great scientist and mathematician Galileo Galilei noted that the book of nature "cannot be understood unless one first learns to comprehend the language and read the characters in which it is written. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures, without which it is not humanly possible to understand a single word of it." [1;15] The history of mathematics concerns one of the most magnificent, surprising, and powerful of all human achievements. In the early 19th century, the noted German mathematician Carl Friedrich Gauss called mathematics the "queen of the sciences" [2] because it was so successful at uncovering the nature of physical reality. Gauss's observation is even more accurate in today's age of quantum physics, string theory, chaos theory, information technology, and other mathematics-intensive disciplines that have transformed the way we understand and deal with the world.

At first, let's answer for a question ―*What is mathematics*?‖ . ―Mathematics‖ is a Greek word, and, by origin or etymologically, it means ―something that must be learnt or understood‖, perhaps ―acquired knowledge‖ or ―general knowledge‖. The word ―maths‖ is a contraction of all these phrases. Among all the sciences maths is distinguished for its universality. It is impossible to give a concise and readily acceptable definition of maths as it is a multifield subject. Maths in the broad sense of the word is a peculiar form of the general process of human knowledge of the real world. Maths deals with the space forms and quantity relations abstracted from the physical world. Maths is the science dealing primarily with what can be obtained by reasoning alone. One of the foremost reasons given for the study of maths is to use a common phrase, that ―*maths is the language of sciences*‖. This is not meant to imply that maths is useful only to those who specialize in science. No, it implies that even a layman must know something about the foundations, the scope and the basic role played by maths in our scientific age. The language of maths consists mostly of signs and symbols, and, in a sense, is an unspoken language. There can be no more universal or more simple language, it is the same throughout the civilized world, through the people of each country translate it into their own particular spoken language.

Mathematics is used throughout the world as an essential tool in many fields, including natural science, engineering, medicine, and the social sciences. Applied mathematics, the branch of mathematics concerned with application of mathematical knowledge to other fields, inspires and makes use of new mathematical discoveries and sometimes leads to the development of entirely new mathematical disciplines, such as statistics and game theory. Mathematicians also engage in pure mathematics or mathematics for its own sake, without having any application in mind, although practical applications for what began as pure mathematics are often discovered.

Mathematical thinking is important for all members of a modern society as a habit of mind for its use in the workplace, business and finance, and for personal decision-making. Mathematics is Fundamental to national prosperity in providing tools for understanding science, engineering, technology and economics. It is essential in public decision-making and for participation in the

knowledge economy. Mathematics equips pupils with Uniquely Powerful ways to describe, analyze and change the world. It can stimulate moments of pleasure and wonder for all pupils When They solve a problem for the first time, discover a more elegant solution, or notice hidden connections.

Mathematics plays an important part in our everyday lives whether we choose to acknowledge the fact or not. Many of our daily activities are done without thought of the underlying mathematics. We not only use mathematics for the obvious tasks like balancing accounts, telling time, and percentage rate calculation; but we also use math in esoteric ways every time we make use a GPS locator, visit a web site, view digital pictures, and even watch DVDs! Think about the nuances that happen every time you make a sound on a cellular phone. Essentially (and most simplistically), the microphone converts the analog signal of your sound wave (which can be represented as a continuous mathematical function) into a digital/binary representation of bytes. After transmission and reception, the bytes have to be processed through a digital to analog conversion function to reconstruct the sound wave to be output by the other phone's speaker. The mathematical conversions make this possible. Many of the mundane things we do (especially when computers are involved) require some usage of mathematics. In the computer industry, two of the most ubiquitous operations are data-encryption and data-compression. These operations can't be done without mathematical manipulation of the input data set. Merely clicking the "Log In" button on a web site doesn't make you secure by itself, it takes math!

In fact, the computer industry in general has mathematicians to thank. Charles Babbage—an English mathematician—designed both the Difference Engine and the Analytical Engine in the early 19^{th} century. Both devices were essentially developed to be mechanical computers. Lady Ada Byron—a mathematical enthusiast and the namesake of the Ada programming language—is credited with creating the first computer program (which was designed to compute Bernoulli numbers on Babbage's Analytical Engine). Alan Turing—an English mathematician and cryptanalyst—designed electro-mechanical machines to break German cryptography during World War II and designed the "Automatic Computing Engine" in 1946. The list of contributions by mathematicians to the computing industry continues still today.[4]

―The Queen of the Sciences‟ is a wonderful subject. The importance of maths which will be quality math help for students are as follows:

1. Maths is a tool for the subjects like physics and chemistry in higher secondary and above.
2. Nothing can be done in Architecture and Designing without the knowledge of Maths.
3. It enables students to interact with numbers.
4. Buiseness is all about making money.
5. Auditors must be avoided as they can cheat you very easily if you are a duffer in maths.
6. All the constructions on earth require mathematics.

Mathematics and other sciences. Essentially application field of a mathematical method isn't restricted: all types of driving of a matter can be studied mathematically. However the role and value of a mathematical method in various cases are various. No certain mathematical circuit settles all concreteness of the valid phenomena, therefore process of knowledge specific flows always in struggle of two tendencies; on the one hand, separation of the form of the studied phenomena and the logical analysis of this form, on the other hand, openings of the moments which are not laying down in installed forms, and passage to reviewing of new forms, and is fuller than more floppy enveloping the phenomena. If difficulties of learning of any circle of the phenomena consist in realization of the second tendency if each new step of research is connected to engaging to reviewing qualitatively the new sides of the phenomena the mathematical method recedes on a background; In this case the dialectic analysis of all concreteness of the phenomenon can be blacked only out a mathematical schematization. If, on the contrary, rather simple and steady main forms of the studied phenomena envelop these phenomena with the big accuracy and completeness, but already within these fixed forms arise difficult enough and the challenges demanding special mathematical research, in particular creations of special symbolical record and special algorithm for the decision we get to sphere of domination of a mathematical method.

Common example of an empery of a mathematical method is the celestial mechanics, in particular the doctrine about driving of planets. The universal gravitation law having very simple mathematical expression almost completely defines a circle of the phenomena studied here. Except for the theory of driving of the Moon, lawfully, within accuracy of observations accessible to us, neglect the form and in the sizes of celestial bodies - their changeover by "the material points". But the decision of the task of driving arising here n the material points under the influence of gravitational forces already in a case n = 3 presents enormous difficulties. But each result received by means of the mathematical analysis of the accepted circuit of the phenomenon, with huge accuracy is carried out actually: logically very simple circuit well reflects the selected circle of the phenomena, and all difficulties consist in extraction of mathematical consequences from the accepted circuit.

To passage from mechanics to physics there is no yet a noticeable reduction of a role of a mathematical method; however difficulties of its application considerably increase. There is no almost an area of the physics which is not demanding the use of rather developed mathematical apparatus, but is frequent the main difficulty of research consists not in development of the mathematical theory, and in a choice of premises for mathematical handling and in interpretation of the results received by a mathematical way.

On an example of some physical theories it is possible to watch ability of a mathematical method to envelop and the process of passage of knowledge of the validity from one step on following, higher and it is qualitative the new. As the classical sample the ratio between the macroscopic diffusion theory assuming diffusing substance arranged continuously, and the statistical diffusion theory, starting with reviewing of driving of separate particles of diffusing substance can serve. In the first theory the density of diffusing substance satisfies to the certain equation with private derivatives. To finding of decisions of this differential equation at appropriate edge and initial conditions learning of the various problems concerning diffusion also is reduced. The continuous diffusion theory with very big accuracy transfers the valid course of the phenomena as business goes about normal for us (macroscopic) space and temporal scales. However for small parts of space (particles of diffusing substance containing only a small number) the concept of density loses certain meaning. The statistical diffusion theory starts with reviewing of microscopic casual relocation of diffusing particles under the influence of molecules of solvent substance. Exact quantitative regularities of this microscopic relocation to us are unknown. However the mathematical probability theory allows (from the general premises about smallness of relocation for small time intervals and independence of relocation of a particle for two serial time intervals) to receive certain quantitative consequences: to define (approximately) distribution laws of probabilities for relocation of particles for the big (macroscopic) time intervals. As the number of separate particles of diffusing substance is very great, distribution laws of probabilities for relocation of separate particles result, in the assumption of independence of relocation of each particle from others, to quite certain, not so casual regularities for relocation of diffusing substance as a whole: to those differential equations on which the continuous theory is constructed. The resulted example is typical enough in the sense that very often because of one circle of regularities (in an example — laws of driving of separate particles of diffusing substance) happens formation of another, is qualitative a new sort of regularities (in an example — differential equations of the continuous diffusion theory) through means of statistics of the casual phenomena. In biological sciences the mathematical method plays more subordinate role. The mathematical method gives way to the immediate analysis of the phenomena in all their specific complexity in social and the humanities. Application of a mathematical method in biological, social and the humanities is carried out mainly through cybernetics Essential there is value mathematics for social disciplines (as well as for biological sciences) in the form of a subsidiary science — the mathematical statistics. In the final analysis of the social phenomena the moments of a qualitative originality of each historical stage acquire so a leading position that the mathematical method often recedes on a background.

In conclusion, I want to finish my article with such fairy tale-legend. Very long time ago there was a kingdom of sciences. The king was the Natural sciences, the queen of the kingdom was

the Mathematics, and the princess was the Literature. And many servants served for royal family.

Once the Queen has quarreled with the spouse: ―Ah, so, - she has exclaimed,- try to do without me!‖ She has left in a huff, and has dashed away in other country. At first all have sighed with simplification, but the present alarm has soon begun. It has appeared that the literature can't enumerate head, a part and page in novels and poems. The natural sciences have lost count planets in a galaxy, days, months and weeks in a year. The history can't install exact dates, event. The geography can't calculate distance between cities. Nobody has managed to do without mathematics. Then have sent messengers all over the world have discovered mathematics and have asked it to return back in kingdoms of sciences. The queen of sciences has returned. And since then in sciences it was established the order. This only a fairy tale-legend, but in it is a small element of truth. Really, the mathematics has a crucial role in our life, and without it nobody can manage. The queen of sciences controls all science.

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