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PERIODS OF DEVELOPMENT OF MATHEMATICS

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Abstract: This article provides information about the stages of development of mathematical science ancient times and the work being done today to develop the field of mathematics.

Keywords: A.N.Kolmogorov , elementary mathematics , Khwarizmi , M.Merson, analytic geometry

Most mathematicians of history prefer the periodicity of the development of mathematics recommended by A.N.Kolmogorov. The main reason for this is that Kolmogorov's periodization is based on important methods, ideas, and results of mathematics. The division of the development of mathematics into such special periods does not completely solve the essence of the history of mathematics but will be an additional tool for a better understanding of the objective laws of mathematical development.

1. The emergence of Mathematics. This period began in the 6th century BC. That is during this period mathematics became an independent science with its own subject and methods. The beginning of the period dates back to the earliest period – the primitive community system – collection of mathematical facts.

2. The period of elementary mathematics (the period of mathematics of variables). It lasted from the 6th to the 5th centuries BC to the 17th century BC. During this period great achievements were made in the study of variables. Mathematics courses taught in secondary schools can give some idea.

The creation of the science of algebra by the Uzbek scientist Muhammad ibn Muso al- Khwarizmi (780-850) , the creation of analytical geometry by Descartes , the beginning of the development of infinitely small quantities. In general , the concept of elementary mathematics is difficult to define. There is no clear definition of it but it is correct to distinguish such a period in the history of mathematics and it makes easier to study its history.

3. Mathematics of variable quantities. The definitive creation of analytic geometry begins with the emergence of differential and integral calculus by I.Newton (1642-1727) and Leibniz (1646-1716). The end of this period goes back to the end of the 19th century. At the same time all the scientific foundations of mathematics, called classical mathematics were formed.

4.Modern mathematics. It dates back to the mid-19th century. This period is ,characterized by the growing role of mathematical abstraction , the widespread use of mathematical modeling in mathematics. It was during

this period that what I called classical mathematics became much narrower to apply to itself , to other areas of mathematics. The reason is that mathematics has split into many branches.

The axiomatic method was widely developed in it . As a result, a new mathematical concept – a mathematical structure – emerged. The concept of mathematical structure helps to teach a unit of mathematical facts and methods that seem too far apart at first glance creates different mathematical structures. In recent years various branches of mathematics and even some mathematical subjects have begun to be interpreted as the material of those structures. Therefore, modern mathematics can be described as a science of mathematical structures and their models. Mathematics like all other sciences, is constantly evolving. There are two reasons for this : first , its development requires daily life and practice. Second , development is required by the internal needs of mathematics. The rapid development of mathematics with pictures has a great influence on the development of technology , economics , production management , as well as the development of other neighboring disciplines. Mathematics (Greek *thematics*, *mathema*-knowledge science) is a science of knowledge based on clear logical observations. In today's mathematics , calculations, even operations on formulas, take up very little space. Mathematics in the oldest branch of science and has a long history of development and at the same time the answer to the question "What is mathematics?" . Has changed and deepened. In Greece mathematics is understood as geometry. In the 9th and 13th centuries the concept of mathematics was expanded by algebra and trigonometry. From the 17th and 18th centuries analytical geometry , differential and integral calculus became central to mathematics and until the early 20th century it was defined as " the science of quantitative relations and spatial forms". In the late 19th and 20th centuries, various geometries (such as Lobachevsky geometry, projective geometry , Riemannian geometry), algebras (Bull algebra, quaternion algebra, Kelly algebra), infinitely dimensional spaces, etc. were very diverse in content, often artificial in nature. As objects began to be studied , the above definition of mathematics became too narrow. During this period as a result of the formation of a specific style and language of observation based on mathematical logic and set theory , the idea emerged in mathematics that feature is strictly logical observation (J.Peano, G.Frege, B.Russell, D.Hilbert).

In the mid- 20th century a group of French mathematicians and revised the definition of mathematics under the pseudonym Burbaki developed this idea and introduced the definition of "Mathematics – the science of mathematical structures". Although this approach was broader and more precise than previous definitions, it was still limited – the relationship between structures (mathematics, series theory, algebraic topology),

practical and applied theories, especially mathematical models in physics, engineering and social sciences. In the last century diversity has a very deep relationship between different mathematical objects and the results based on this show that it plays a key role in further development of mathematics.

Along with electronic computing , the expansion of mathematical applications (biometrics, sociometry, econometrics, psychometry,etc.) and the rapid penetration of mathematical methods into various spheres of life have expanded the subject of mathematics beyond comprehension. So mathematics is axiomatic is a science that studies theories and mathematical models , the relationships between them and whose conclusions are based on rigid logical observations. The scholars of the Muslim East also developed geometry (Thabit ibn Qurra, Abulvafo, Umar Khayyam), the founders of trigonometry as a science (Ibn al-Haytham, Beruni, Tusi), in particular Ahmad al-Farghani's proof of Ptolomy's theory of steographic projection . He showed a deep study of geometry at the academy. The ways in which mathematicians who wrote in Arabic solved third and fourth- order equations geometrically later led to the creation of analytical geometry.

The Khorezm Mamun Academy (Ibn Iraq , Beruni) also played an important role in the development of mathematics . The culmination of the development of Eastern mathematics dates back to the Samarkand Scientific School. Ulugbek and his scientists (Qozizoda Rumi , Giyosiddin Kashi, Ali Kushchi, Miram CHalabi, Hussein Birjani,etc.) built a huge observatory , stars coordinates and precision, as well as methods for calculating the spherical coordinates of lamps based on the results of observations , interpolation formulas, a method later called the Gerner scheme and a method of sequential approximations. There are also tables of trigonometric functions with high accuracy from the age of Ulugbek "Ziji jadidi Koragoniy".

From the 17th century began a new era in the history of mathematics , associated with the name of J.Wallis, I.Kepler, R.Dakart, B.Cavalieri, P.Fermat , F.Villette and others Pascal. Mathematical definitions are widely introduced. Has a positive effect on the development of mathematics. Analytical geometry forms the basis of probability theory , projective geometry and number theory. During this period mathematics became the main subject in the newly opened universities had to work with new problems. Due to the lack of elementary methods in solving such problems, they began to resort to infinitely repetitive actions. B.Cavalieri used the "indivisible method" in calculating the volume of rotating bodies. F.Viet found equality , J.Vallis equated 12,32,52,72 , Mercator found the formula . At the end of the 17th century research in this area led to the creation of differential and integral calculus was identified as one the complaints. Over the past period , a number of systematic works have been carried out to bring mathematics science and education to a new level of quality.

Secondly, a system of incentives for the work of our young people and their teachers , winners of the International Science Olympiads was introduced. Thirdly, in order to ensure the integration of higher education and scientific prohibitions. A new and modern building was built. Founding for fundamental research in the field of mathematics has been increased by one and a half times , supercomputers , modern machinery and equipment have been purchased at the expense of the budget. Fourth, the connection between scientific research in the field of mathematics and practice and production remains weak. Further improvement of the system of teaching mathematics at all stages , support of effective work of teachers, expansion of the scope and practical significance of scientific research , strengthening ties with the international community , as well as five priorities for the development of the Republic of Uzbekistan in 2017-2021 in order to ensure the implementation of the tasks set out in the state program for the implementation of the Action Strategy in the “ Year of Science, Enlightenment and Digital Economy”.

Improving the quality of education in mathematics , developing scientific research Priorities for the implementation of work and scientific developments in practice have been identified : Formation of an integrated system that provides close cooperation between preschool, general secondary , secondary special , professional , higher education institutions and research institutions ; Introduction of modern pedagogical technologies for the formation of the first mathematical concepts in preschool children on the basis of advanced foreign experience; Teaching mathematics in general secondary and secondary special education institutions , improving the quality , teaching mathematics in the regions , development of the system of training and retraining of personnel in mathematics, especially in rural areas , the development of textbooks and manuals on mathematics

Determining talented young people and their math Ensuring successful participation in local and international science Olympiads and winning prizes, Creation and implementation of an online education platform , improving the effectiveness of distance learning , ensuring the transparency of the assessment system introduction of mechanisms , increase of lessons on mathematics and improvement of quality of education in the corresponding directions and specialties of higher education ;

President of the Republic of Uzbekistan from July 9, 2019 “ Mathematics education and amendments to the Resolution of Uzbekistan” PP-4387 . “On measures to radically improve the activities of the Institute of Mathematics named after Viromanovsky of the Academy of Sciences of the Republic of Uzbekistan, as well as state support for further development of science”. National Agency “Uzbekkino”, the National Television and Radio Company of Uzbekistan , the Ministry of Finance and the Academy of Sciences in

accordance with the decision of President from September 1, 2021, a monthly bonus of 50 % of the base rate for teachers of specialized schools will be made, It is planned to submit a draft government resolution on the procedure for payment to the Cabinet of Ministers of the Republic of Uzbekistan.

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**METHODS OF TEACHING PHYSICS FOR NON-PHYSICAL BACHELORS BY THE
METHOD OF "WORKING IN SMALL GROUPS"**
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At present, modern teaching methods are widely used in the educational process. The use of modern teaching methods leads to high efficiency in the teaching process. When choosing teaching methods, it is advisable to choose based on the didactic function of each lesson.

While maintaining the traditional form of the lesson, enriching it with methods that activate the activities of various learners leads to an increase in the level of mastery of learners. To do this, high efficiency can be achieved through the rational organization of training, the interest of learners by the educator, the choice of methods and tools in accordance with the content of the studied material. The level of mastery, practical skills and competencies of learners can be developed through interactive or interactive teaching methods.

Interactive methods are methods that activate students and encourage independent thinking, which serve to achieve high efficiency in the educational process in the cooperation of student-student. When these