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UNDERSTANDING GEOMETRIC PROGRESSIONS: A BASIC MATHEMATICAL CONCEPT JURAYEV MUZAFFARJON MANSURJONOVICH

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ABSTRACT

This article describes the general analysis of theoretically based approaches to the identification of effective methods and tools, which are important for teaching geometric progression in secondary schools, and the use of methods aimed at teaching geometric progression.

Keywords: method and tool, creative approach, didactic geometric progression, innovation.

Within the broad scope of mathematics, certain concepts serve as foundational pillars, providing the basis for many applications in various fields. Among these, Geometric Progression emerges as a fundamental and pervasive idea with far-reaching implications. Whether in finance, the natural sciences, or population studies, the geometric progression is a mathematical tool that elegantly captures the essence of multiplicative growth or decay.

A geometric progression is a successive arrangement of numbers in which each term is formed by multiplying the previous term except the prime by a constant factor known as the common ratio. This simple mathematical concept becomes a powerful framework capable of describing exponential phenomena and providing insight into dynamical systems.

The importance of geometric progression lies in its ability to model real-world scenarios with accuracy and simplicity. From predicting financial outcomes due to compound interests to understanding population trends shaped by exponential growth or decline, geometric progressions find applications in many disciplines. As we move into an era where we increasingly rely on data-driven decision making, understanding geometric progression becomes a valuable skill that enables us to analyze, design, and understand complex systems.

As we begin the study of geometric progression, we invite students to discover the elegance and versatility of a mathematical concept that not only shapes equations on paper, but that underpins our dynamic and interconnected world.

To understand the practical application of geometric progression, let's look at some vivid examples that illustrate the importance of geometric progression in various real-world scenarios.

Example 1: Joint interest in finance

Consider an investment of $1,000 that grows at an annual interest rate of 5%. After each year, the investment value forms a geometric sequence.

This shows how geometric progression is important in understanding compound interest growth over time.

$a1=1000$

$r= 1 + (5\%/100) = 1,05$

find the value after 3 years (a_3):

a_3 = a_1 \times r^{(3-1)} = 1000 \times (1.05)^2 \about $1102.50

it shows how geometric progression is important in understanding the growth of compound interest over time.

Example 2: Population growth in biology

Let's say the number of bacteria doubles every hour. If the initial population is 100 bacteria, we can model this growth using a geometric sequence.

Initial population (a1): 100

General ratio (r): 2

Finding the population after 5 hours (a5):

(a5)=1600

Summary: Embracing the infinite possibilities of geometric progression

At the end of our exploration into the world of geometric progression, we find ourselves at the intersection of elegance and practicality. Geometric progression proves to be a mathematical concept that transcends disciplinary boundaries with its seemingly simple but very powerful principles and offers a lens through which we can analyze, model, and understand dynamic phenomena.

By the end of this journey, it will be clear that the application of geometric progression goes beyond mathematical theory. From predicting financial outcomes to uncovering population trends, and from uncovering the secrets of exponential decay to influencing real estate dynamics, geometric progressions emerge as a universal language spoken across a variety of industries.

our understanding of geometric progression provides a foundation, a starting point, for further exploration of complex areas of advanced mathematical concepts, interdisciplinary applications, and the subtle beauty embedded in the patterns of the natural world. The geometric sequence with its rhythmic progression reflects not only mathematical precision, but also harmony in the symphony of nature.

As students, teachers, and math enthusiasts, we are equipped with a versatile tool that offers us the opportunity to continually explore, question, and innovate. geometric progression invites us to discover its nuances in computer science algorithms, explore its connections with calculations, and appreciate its manifestation in the artistry of the world around us.

In the ever-expanding landscape of knowledge, the journey does not end there. Whether you're interested in the theoretical depth of infinite geometric series, the practical applications in computer science, or the aesthetic appeal of nature's patterns, Geometric Progress invites you to keep exploring, questioning, and expanding the boundaries of your mathematical understanding.

So, armed with the insights gained from our study of geometric progression, let us embark on further journeys of discovery. Let this knowledge guide you as you navigate the complexities of our ever-evolving world, where mathematical principles not only explain the past, but also pave the way for a more informed and enlightened future.

REFERENCES

1. Mansurjonovich, Jo'Rayev Muzaffarjon. "BO 'LAJAK O 'QITUVCHILARNING KASBIY TAYYORGARLIGINI RIVOJLANTIRISH JARAYONIDA "INVERTED" O 'QUV RESURSLARIDAN FOYDALANISHNING AFZALLIKLARI." Science and innovation 2.Special Issue 10 (2023): 161-165.
2. Mansurjonovich, Jo'Rayev Muzaffarjon. "RAQAMLI TA'LIM MUHITIDA PICRAT MODELI ASOSIDA BO 'LAJAK O 'QITUVCHILARNI KASBIY FAOLIYATGA TAYYORLASH TEXNOLOGIYALARI." Science and innovation 2.Special Issue 14 (2023): 238-242.
3. Mansurjonovich, Juraev Muzaffarjon, and Muzaffar Mansurovich Botirov. "Characteristics Of Teaching Programming Based On Different Principles." Eurasian Journal of Engineering and Technology 17 (2023): 85-90.
4. Jo'Rayev, Muzaffarjon Mansurjonovich. "KIBER PEDAGOGIKA–XXI ASRDA RAQAMLI TA'LIM MUHITI PEDAGOGIKASI." Academic research in educational sciences 4.KSPI Conference 1 (2023): 103-110.
5. Mansurjonovich, Juraev Muzaffarjon. "DESIGNING THE STRATEGY OF STUDENT INDIVIDUALITY IN INDEPENDENT RESEARCH ACTIVITY." Galaxy International Interdisciplinary Research Journal 11.4 (2023): 1048-1055.
6. Juraev, Muzaffarjon Mansurjonovich. "Pedagogical conditions for the development of vocational education through interdisciplinary integration into the vocational education system." НАУКА, ОБРАЗОВАНИЕ, ОБЩЕСТВО: АКТУАЛЬНЫЕ ВОПРОСЫ, ДОСТИЖЕНИЯ И ИННОВАЦИИ. 2021.
7. Mansurjonovich, Juraev Muzaffarjon. "Methodological foundations for improving the content of training future ict teachers in the conditions of digital transformation of education." Актуальные вопросы современной науки и образования 9 (2022).
8. Juraev, Muzaffarjon Mansurjonovich. "Methodological foundations for improving the content of training future ict teachers in the conditions of digital transformation of education." (2022): 9-11.
9. Mansurjonovich, Juraev Muzaffarjon. "Designing an electronic didactic environment to ensure interdisciplinary integration in the teaching of" Informatics and information technologies" during professional education." Confrencea 3.03 (2023): 78-82.
10. Mansurjonovich, Juraev Muzaffarjon. "CURRENT STATUS OF THE SCIENCE OF INFORMATICS AND INFORMATION TECHNOLOGIES IN THE PROFESSIONAL EDUCATION SYSTEM, EXISTING PROBLEMS AND SOLUTIONS, PRINCIPLES AND CONTENT OF THE SCIENCE ORGANIZATION." Galaxy International Interdisciplinary Research Journal 10.12 (2022): 327-331.
11. Juraev, Muzaffarjon Mansurjonovich. "The value of open mass competitions in the process of digitalization of extracurricular activities of schoolchildren." Web of Scientist: International Scientific Research Journal 3.10 (2022): 338-344.
12. Mansurjonovich, Juraev Muzaffarjon. "Professional Educational Institutions Theoretical and Practical Basis of Development of the Content of Pedagogical Activity of Teachers of" Information and Information Technologies"." Open Access Repository 9.12 (2022): 85-89.
13. Mansurjonovich, Juraev Muzaffarjon. "Experience Of Cambridge Curricula In Ensuring The Continuity Of Curricula In The Field Of "Computer Science And Information Technology"

In The System Of Professional Education." The American Journal of Interdisciplinary Innovations and Research 3.11 (2021): 26-32.

14. Juraev, Muzaffarjon Mansurjonovich. "Prospects for the development of professional training of students of professional educational institutions using electronic educational resources in the environment of digital transformation." Academicia Globe: Inderscience Research 3.10 (2022): 158-162.