

## The Role of Mathematical Terminology in the Adaptation of Algerian Students to Russian Society

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### Abstract

This study investigates the challenges encountered by Algerian students in communicating within Russian society, with particular emphasis on the role of mathematical terminology as a bridge between Russian language learning and adaptation to a new socio-cultural environment. The study adopts a methodology that integrates practical experience, theoretical analysis, and survey data collected from Algerian students studying in Russia to examine the impact of mastering Russian mathematical terminology in everyday contexts.

The findings indicate that proficiency in Russian mathematical terminology extends beyond academic achievement, contributing significantly to effective communication, financial literacy, and the successful management of everyday situations. Furthermore, the results demonstrate that students who acquire mathematical terminology in Russian exhibit greater self-confidence, are less vulnerable to fraudulent practices, and develop a deeper understanding of Russian culture. Based on these findings, the study recommends incorporating the concept of "social mathematics" into Russian language curricula in Algeria to better prepare students for academic study and social integration in Russia.

**Keywords:** Mathematical Terminology, Russian Language, Algerian Students, Cultural Adaptation, Communication, Russian Culture, Social mathematics, Financial Literacy, Russian Language Pedagogy.

### INTRODUCTION

The Russian language is considered one of the important languages in the world because it offers great opportunities for students, especially in the academic and professional fields. However, its study is not limited to grammar and morphology, but includes a deep understanding of culture and traditions, as well as various scientific languages, including mathematics, which we use in every day life to express numbers, geometric figures, currency exchange, etc.

Mathematics plays an important role in developing students' abilities to communicate and interact with Russian society. Moreover, Mathematics also plays a vital role in all aspects of life, whether in every day activities such as time keeping, driving, cooking, or in jobs such as accounting, finance, banking, engineering, and software<sup>1</sup>.

In the same context, mastering mathematical terminology is not just an additional skill for students studying Russian, but also a necessary element for their success in their studies and in scientific and practical life.

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<sup>1</sup> Mamedova, Orazova 2023, The role of mathematics in the development of society. International Scientific Journal "VESTNIK SNAUKI", 5(62), 368–372. p.22.

The main objective of Teaching mathematical terminology to students of the Russian Language Department at the University of Algiers paves the way for students to communicate effectively in a real context, which means to shift from the theoretical side of university education to the social reality during their studies, or after graduation. Success in this process is achieved through the correct use of the vocabulary acquired during training in order to be used in various life situations, in studies, at work, in tourism, etc. Therefore, teaching is based on the use of authentic tasks that can be performed in the classroom by the students. It is very important to relate use and usage and design the syllabuses relying on authentic materials, authentic tasks.

Particular attention is paid to the importance of using mathematical terminology in everyday situations, especially when making financial transactions in various institutions, at the airport, in the bank, at the market, etc. So, knowing these terms allows students to make correct calculations, avoid financial mistakes and fraud, and make informed decisions about purchases.

It is worth noting that the study of mathematical terminology has great cultural significance, since it opens access to understanding Russian culture and its historical roots. Numbers, figures, mathematical and geometric concepts, etc., also play an important role in participating in clubs, scientific competitions and various cultural forums, as well as in studying Russian civilization and its history.

It is noteworthy that adaptation to Russian society through mathematical terms also has psychological aspects. So, the better a foreign student entering Russia will speak Russian, including mathematical terminology, the more self-confidence he will gain, and thus, he will become more independent and able to make important decisions.

In addition, knowledge of mathematical terms facilitates access to other areas of knowledge, such as the Internet, computer science, auto mechanics, etc. Which contributes to successful integration into Russian society, and guarantees him success directly, through proper time and budget management, in accordance with the amount of money he /she has, and the period he/she spends in Russia.

## **2. Introduction to Mathematical Terminology Studied by Students of the Russian Language Department of the University of Algiers.**

A term is a unity of an element from the external aspect—the level of "lexis"—defined from the internal aspect by an element of "logos"—that is, the concepts belonging to a conceptual scientific field or technical discipline<sup>2</sup>.

In particular, L. S. Barkhudarov defines a term as a word or phrase used to designate a concept within a specialized field of knowledge or area of human activity<sup>3</sup>.

It is difficult to overestimate the role and significance of mathematical terminology in the era of high technology. Mathematics is one of the oldest sciences; its origins date back to the Paleolithic era—the Old Stone Age—approximately 3 million years ago, when the first concepts of number and shape emerged and took form<sup>4</sup>.

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<sup>2</sup> Melnikov G.P. Fundamentals of Terminology Studies. – Moscow: Peoples' Friendship University Press, 1991. – 116 p. – P. 7

<sup>3</sup> Barkhudarov L.S. Language and Translation: Issues of General and Specific Translation Theory. – Moscow: International Relations, 1975. – 240 p. – P. 6

<sup>4</sup> Gilmullin M.F. History of Mathematics: A Textbook. — Yelabuga: EGPU Press, 2009. — 212 p. – P. 17

In modern scientific literature, a mathematical term is understood as "the core component of mathematical language, viewed as a variety of scientific language."<sup>5</sup>

This chapter includes the most important mathematical terms that can help Russian language learners communicate and cope with various social institutions, such as school, university, market, store, bank, airport and others. Accordingly, our choice was focused on the following terms: Number and digit, amount, percentage; angle, parallelism, perpendicularity, circle and circumference, sphere and ball, polyhedron, length, width, height, area and volume, and below we will give a detailed explanation of the meaning of these terms and their mathematical meaning.

Since often, a person even without knowing mathematical arithmetic spontaneously expresses a number through messages about time, age, price of purchases and products. It becomes necessary to get acquainted with the term number, which is one of the basic concepts of mathematics, formed in the course of a long historical development.

Unlike a number, a digit is a conventional sign or symbol that represents a number and a digit does not contain a quantitative value<sup>6</sup>.

Meanwhile, numbers are written using digits. For better understanding and explanation, we can say that a number is expressed by digits.

It is important to note that the word "amount" can have different meanings depending on the context. In a mathematical sense, it is the result of adding two numbers. However, in every day life, we can talk about "the amount of income" or "the amount of debt", meaning the total amount of money or liabilities.

Division is defined as the inverse operation of multiplication. The purpose of division is to find the quotient (d) when dividing the dividend (a) by the divisor (b), where b is not zero.

Along with other mathematical concepts, the term "percentage" occupies a special place in our speech. It is not only an important mathematical concept, but also widely used in everyday communication. In other words, a percentage is a hundredth of a whole taken as a unit<sup>7</sup>.

This term is extremely necessary in our daily lives, when announcing discounts in a store, observing the growth of food prices, wage growth, showing the charging of a phone battery, participating in voting and elections, etc.

It should also be noted that the term equality is understood as two expressions between which there is an equal sign ( $=$ ), and the difference a and b is the result of subtracting homogeneous quantities: numbers, vectors, matrices, determinants, etc. On the other hand, proof is reasoning with the aim of substantiating the truth of any statement of the theorem<sup>8</sup>.

Other terms worth mentioning are exponentiation, or multiplying a number by it self several times, where there are two inverse operations, this is root extraction, or finding the number that when raised to a power gives the original number, and logarithm, or finding the power to which the base must be raised to get the original number. Also, plus, this is a sign (written "+") to denote the action of addition and positivity of numbers and other quantities.

<sup>5</sup> Shukurova S.R. Structural-Semantic Analysis of Mathematical Terminology in the Russian and Tajik Languages: Abstract of a Dissertation... Candidate of Philological Sciences. – Dushanbe, 2014. – 22 p. – P. 6

<sup>6</sup> Zhoken Kyzy The use of mathematical terms in oral and written Russian speech in their literal and figurative meanings. Graz.2017, p.22

<sup>7</sup> Lapuzina, Romanov, Romanova, Educational Russian-Arabic 2017, p.91

<sup>8</sup> Romanov, Popova, Leonov 2003. *Mathematics from A to Z*. Barnaul. p.38

There are also geometric terms worth mentioning, such as an angle, which is a geometric figure formed by two rays emanating from a common point called the vertex of the angle, and a circle, which is part of a plane bounded by a closed curved line called a circumference. There are also such important terms as a circle, which includes all the points located inside the circle, as well as its center.

In addition, parallelism, is defined as an equivalence relation on a set of lines on a plane, or on a set of planes in three-dimensional space<sup>9</sup>.

In the same context, we mention perpendicularity, which is defined as a relationship between two geometric objects, such as lines, planes, or vectors, that intersect at a right angle of 90 degrees. We can say that a circle is a set of points on a plane that are at the same distance from a given point or center. This distance is called the radius of the circle.

A ball is a three-dimensional body consisting of all points in space that are at a distance of no more than a given value from its center. The boundary of a ball is called a sphere. In addition, a polyhedron can be represented as a three-dimensional figure bounded by flat polygons. Each of these polygons is a face of the polyhedron. And its vertex is a corner point at which several faces or edges intersect.

In the context of the study of the metric properties of geometric objects, length is defined as a fundamental characteristic expressing the extension of a line element. It quantitatively evaluates the distance between two points in a given space.

Another definition of height is a segment, as well as the length of a segment of the perpendicular dropped from the vertex or top of a geometric figure, in particular, a triangle, pyramid, cone, to its base or continuation of the base<sup>10</sup>.

In the context of Euclidean geometry, an obtuse angle is classified as an angle between 90 and 180 degrees. An acute angle, on the contrary, is defined as an angle whose measure does not exceed 90 degrees. In geometry, we also encounter such terms as the diameter of a circle, which is defined as a segment connecting two points on a circle and passing through its center. This segment is the longest chord of the circle and is equal to two of its radii. And a ray can be represented as a half-line starting at a certain point and continuing indefinitely in one direction.

At the same time, the Coordinate Axis is used to determine the position of points on a line using numbers or coordinates. Moreover, each point on the coordinate axis has its own unique coordinate, showing its distance from the origin in the scale specified on the axis.

And a point in geometry is an abstract object that has no size, shape or other measurable characteristics. It denotes a specific location in space, but in itself does not occupy any space. On the other hand, the projection of a point on a given axis is the point of intersection of this axis with a line drawn through the original point perpendicular to the axis.

A rectangle is a parallelogram with all right angles. The diagonals of a rectangle are equal<sup>11</sup>.

A triangle is a geometric figure formed by three segments connecting three points that do not lie on the same line. These points are called the vertices of the triangle, and the segments are its sides.

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<sup>9</sup> Sabinina 1978, *Mathematics in concepts, definitions and terms* (Part 1). Moscow. p.114

<sup>10</sup> (Romanov, Popova, Leonov 2003, p.23)

<sup>11</sup> (Lapuzina, Romanov, Romanova, 2017, p.93).

At the same time, a pyramid is a polyhedron that consists of a base, side faces, a vertex, and edges, and the area is a numerical characteristic of flat geometric figures. The area is measured in square units<sup>12</sup>.

In addition, the center is a point that has a certain property of symmetry or balance in a geometric figure or body. For example, the center of a circle is equally distant from all its points, and the center of gravity of a body is the point at which its entire mass is concentrated.

A cylinder is a geometric body bounded by two identical circles (bases) located parallel to each other and a surface formed by segments connecting the corresponding points of these circles. An ellipse is a set of points on a plane for which the sum of the distances from two given points is a constant value<sup>13</sup>.

A degree is a unit of measurement of plane angles. One degree is equal to 1/90 of a right angle or 1/180 of a straight angle. The symbol ° is used to denote degrees, and a square is a rectangle with all sides equal. Coordinates are numbers that show where a point is located on a line, plane or in space.

Finally, volume is one of the basic quantities associated with geometric bodies. In the simplest cases, it is measured by the number of unit cubes that fit in the body, i.e. cubes with an edge equal to a unit of length<sup>14</sup>.

Distance in geometry is a concept that depends on the objects between which it is measured. For example, the distance between two points is the length of the line segment connecting them.

Therefore, a survey was conducted to gather requests for certain specializations that were attractive to applicants (each student individually).

| The Questions                                     | <b>Student 1:</b><br>"Ahmed"<br>(Preparatory year – Medicine; participant in a training program in Russia) | <b>Student 2:</b><br>"Sara"<br>(Second year – Engineering)                                                     | <b>Student 3 :</b><br>"Mourad"<br>(Foreign Languages graduate; participant in a training program in Russia) | <b>Student 4 :</b><br>"Yassine"<br>(New student – Commerce) |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| 1. The difference between a number and a numeral? | Honestly, I use them interchangeably and don't pay much attention to the difference.                       | Yes, in mathematics, the distinction is very precise: a "numeral" is a symbol, where as a "number" is a value. | I know the linguistic difference, but in everyday life, Russians themselves are not strict about it.        | I don't know; I think they are the same thing in Russia.    |

<sup>12</sup> (Lapuzina, Romanov, Romanova, 2017, p.75).

<sup>13</sup> (Lapuzina, Romanov, Romanova, 2017, p.137).

<sup>14</sup> (Romanov, Popova, Leonov 2003, p.83).

|                                             |                                                                                                     |                                                                                            |                                                                                               |                                                                              |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 2. Percentage?                              | Yes, I use it to calculate my exam average.                                                         | Usually, it's fundamental to the probability calculations in my studies.                   | I only use it to figure out store discounts.                                                  | It's a bit hard to pronounce, but I understand it when shopping online.      |
| 3. Explaining geometric terms?              | I can name them, but explaining them in Russian is very difficult for me right now.                 | Yes, this is my core area of expertise; I can explain angles, right angles, and triangles. | I cannot explain them; I only know the basic shapes by name.                                  | I barely know the words "circle" and "square."                               |
| 4. Formal study of vocabulary?              | Yes, we studied a whole chapter on it in physics and mathematics.                                   | We studied very complex vocabulary, which is essential for our lectures.                   | No, we focused only on Russian literature and grammar.                                        | We haven't studied it yet; we are currently focusing on greetings and verbs. |
| 5. Financial difficulties?                  | I encountered a problem at the currency exchange because I didn't understand the "commission rate." | No, because I am used to making precise calculations before going to the bank.             | Yes, at the airport when calculating excess baggage and fees.                                 | I always rely on the calculator because I don't understand the speech.       |
| 6. Greater confidence within the community? | Yes, I feel "smart" when I speak their mathematical language.                                       | Certainly; Russian colleagues respect those who have mastered the technical terminology.   | Confidence comes from the rules, but the terminology conveys an impression of sophistication. | Yes, it makes me feel like I'm not lost in the market.                       |

|                     |                                                        |                                                                 |                                                       |                                                       |
|---------------------|--------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| 7.Frequency of use? | Daily at the university and the supermarket.           | About once an hour, due to the nature of the technical studies. | Daily when taking the *marshrutka* (minibus).         | Rarely—only when discussing schedules or prices.      |
| 8. Avoiding fraud?  | Yes, especially with taxi drivers who alter the fares. | Certainly, accurate calculation prevents any bill tampering.    | Yes, it helps spot calculation errors in restaurants. | I hope so; I'm afraid of being misled by the numbers. |

The survey results show that **100% of the participants** use or encounter mathematical terminology in their academic or everyday lives, and **100%** believe that mastering it increases their confidence. Moreover, **75%** use mathematical terminology daily or very frequently, while **75%** have experienced difficulties in financial or numerical situations. Only **50%** reported having formally studied mathematical vocabulary, and only **25%** felt able to explain geometric concepts confidently in Russian.

These findings indicate that mathematical terminology is an important component of practical Russian-language competence. They also demonstrate the need to integrate mathematical vocabulary more systematically into Russian-language teaching through authentic materials and real-life tasks related to banking, shopping, transportation, university studies, and other social situations.

### 3. The use of Mathematical Terminology in Students' Interaction with Various Social Institutions (Educational, Banks, Markets, etc.)

This fosters identity formation, independence, and resilience. Mastery of terminology reduces vulnerability, increases confidence, and supports social belonging.

The main goal of The training of the students in the Russian Language Department is to allow the students to effectively communicate with the real Russian environment, that is, to shift from the theoretical aspect while receiving information at the university to social reality during or after graduation. At the same time, they can develop the ability to use the language vocabulary acquired during their scientific path, and to practice in various life contexts, in studies such as , tourism, at work, and others.

In the same context, it is obvious that the importance of using mathematical terminology is strongly manifested in every day operations, which ensures the correct conduct of financial transactions in various institutions, at the airport, bank, market, etc. Mastering these terms gives the student the ability to make the necessary calculations, which helps to avoid financial errors and various types of fraud, and also guarantees to make thoughtful, reasonable, and correct decisions about purchases and various transactions.

It should be noted that mastering mathematical terminology is of great cultural significance, since it opens up huge prospects for understanding the history of Russian civilization, the time of its emergence in numbers and forms, and therefore, it penetrates deeper into its historical roots, because

numbers, figures, mathematical and geometric figures play a significant role in participating in scientific clubs and councils, competitions and various cultural forums, in addition, they allow the students in the future to get acquainted with the Russian economy.

It is striking that adaptation to Russian society by means of mathematical terminology has psychological aspects for a foreigner. This is proven by the fact that a foreigner who comes to Russia, knowing the Russian language and its various linguistic vocabulary, as well as mathematical terminology, gains self-confidence, acquiring an independent personality, capable of making important, correct, and final decisions. This fact also facilitates his access to other areas, such as the Internet, automated media, auto mechanics and others.

And thereby acquire life skills that help him/ her integrate into society and achieve success, for example, time and budget management depending on the amount of money he/ she has, and on the other hand, the time he/ she will spend in Russia so, in this case calculations and mathematical analysis are crucial. Moreover, the importance of mathematical terms in Russian society is evident in interactions with various institutions.

So a student living or traveling to Russia can not avoid interactions in various institutions, such as the airport, university, bank, and the market. In these places, the student needs to understand numbers, amounts of money, and simple arithmetic. And in the field of travel and tourism, the student needs to calculate costs, percentage of price reductions or discounts, as well as compare prices and calculate distances. He must also be able to understand price signs and commercial offers.

Moreover, in terms of work, the student must deal with numbers, statistics, and tables, and he / she must also understand basic mathematical concepts to solve problems that he/ she may encounter in his/ her work.

To concretize and implement these aims practically in the classroom, the following tasks are recommended to enable students to transition from theoretical knowledge of mathematical terminology to real-life application :

Firstly, students can be given real or simulate invoices in Russian containing lists of products, their quantities, and unit prices. They will identify these elements and calculate the total sum and the applicable VAT or tax percentage. For example, if a student has a receipt showing two algebra books priced at 800 rubles each, they will calculate the total price as 1600 rubles and then compute a 10 percent tax as 160 rubles.

This exercise helps students understand financial vocabulary and perform practical calculations necessary for market or bank transactions, thus helping them avoid errors or fraud as highlighted in the article.

Secondly, students work with authentic train or bus schedules written in Russian, converting departure and arrival times into total minutes and calculating the duration of journeys. This task enhances their grasp of time-related vocabulary and numerical operations involving hours and minutes, which are vital skills for managing travel and punctuality effectively in Russian society.

Thirdly, interpreting Russian bank statements is another recommended practice. Students examine records showing deposits and withdrawals, calculated daily averages, and identify the highest and lowest expenses. This task improves financial literacy, allowing students to understand terms like income, expense, balance, and average. It also cultivates greater confidence and independence by familiarizing them with managing their accounts accurately, reflecting the psychological benefits underscored by the research.

By systematically incorporating these practical exercises into their learning, students progressively build a bridge from abstract knowledge to everyday applied competence. This method aligns with the article's call to move beyond mere theoretical training towards actual language use in meaningful contexts, supporting social integration, academic success, and personal empowerment in Russian society.

#### 4. CONCLUSION

The Knowledge of mathematical terms in Russian opens up wide opportunities for Algerian students. It not only promotes successful adaptation in Russian society and prevents financial risks, but also increases self-esteem and self-confidence. Mathematics is becoming not just an academic discipline, but a key to mastering new knowledge and skills in various fields.

The study showed that teaching mathematical terminology has a positive effect on students' motivation and contributes to the development of their analytical skills. The survey results show that students who actively study mathematical terms demonstrate higher academic performance in Russian and other subjects.

To further develop this area, it is necessary to expand the practice of teaching mathematical terms in Algerian universities. Therefore, it is recommended to include them in the curricular in innovative ways, using interactive technologies, and organizing special courses and seminars. An important step will also be the creation of Russian-Arabic dictionaries of mathematical terms, and the improvement and strengthening of academic mobility by organizing internships for students abroad to study mathematical terminology.

Future research can be aimed at studying the influence of cultural characteristics on the perception of mathematical concepts, as well as the development of new methods of teaching mathematics, taking into account cultural nuances and the specifics of the Algerian educational context in order to improve the effectiveness of mathematics in Algerian educational institutions. What is important in fact is to rely on real world teaching materials in order to bring the real world into the classroom which is an artificial setting and to motivate the students by asking them to perform in the classroom real life tasks to be able to use the language effectively in real contexts.

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