

**DERIVATIONAL FORMATION OF MATHEMATICAL TERMS IN ENGLISH AND  
UZBEK**

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**Annotation**

This article examines the formation of mathematical terminology in English and Uzbek through derivational processes. It focuses on morphological mechanisms such as affixation and analyzes how these processes contribute to the development of scientific vocabulary. The study also incorporates scholarly perspectives to provide a deeper theoretical foundation for the analysis.

**Keywords**

derivation, mathematical terminology, morphology, affixation, English, Uzbek, word formation

**Introduction:** Scientific language requires a high level of precision, consistency, and systematic organization. Mathematics, in particular, depends on clearly defined terminology to express abstract concepts and logical relationships. For this reason, the formation of mathematical terms is closely connected with linguistic processes, especially derivation. Derivation is widely recognized as one of the most productive methods of word formation in many languages. It enables the creation of new lexical items from existing bases by adding affixes. According to Bauer, derivation is “a central mechanism for vocabulary expansion in modern languages”. This idea is particularly relevant in the field of mathematics, where new concepts continuously require precise naming. Both English and Uzbek utilize derivation as a key strategy for developing mathematical terminology. However, due to differences in linguistic structure and historical development, the realization of this process varies between the two languages.

**Main body:** Theoretical foundations of derivation: From a linguistic point of view, derivation involves the formation of new words by attaching prefixes or suffixes to a base form. This process often results in a change in meaning or grammatical category. As noted by Katamba, derivation “creates lexemes that are semantically related to the base but function as independent units in the language”. In scientific discourse, derivation plays an additional role by structuring knowledge. It allows related concepts to be expressed through a shared morphological base, thereby creating a network of interconnected terms. Marchand emphasizes that derivation contributes to the “systematic organization of vocabulary in specialized domains”. This systematic nature is especially important in mathematics, where clarity and logical consistency are essential. Derived terms help transform actions into abstract concepts, enabling more efficient communication of complex ideas.

Derivational patterns in english mathematical terminology: English mathematical terminology demonstrates a wide range of derivational patterns. This diversity is largely due to the historical influence of Latin and Greek on the English lexicon. As Crystal points out, “a significant portion

of scientific vocabulary in English originates from classical languages”. One of the most common patterns is the formation of abstract nouns from verbs. For example, verbs denoting actions are converted into nouns that represent mathematical operations. Plag notes that such transformations are “typical in scientific registers, where processes are conceptualized as entities”. In addition to suffixation, English active uses prefixes to modify meaning. Prefixes can indicate relationships such as position, degree, or interaction. According to Lieber, prefixation “extends the semantic range of a base word without altering its core meaning”. Another important feature of English is the coexistence of multiple derivational models. Native word-formation patterns operate alongside borrowed structures, creating a flexible and dynamic system. This flexibility allows English to adapt quickly to new scientific developments.

**Derivational features of uzbek mathematical terminology:** Uzbek mathematical terminology is primarily based on suffixation, reflecting the agglutinative nature of the language. Each suffix carries a specific meaning and is added in a linear and predictable manner. This results in a high degree of morphological transparency. As noted by Rahmatullaev, Uzbek word formation is characterized by “a clear and systematic use of suffixes to express grammatical and lexical meanings”. This feature makes it easier to form and interpret derived terms. In mathematical terminology, Uzbek frequently uses suffixes to express abstract concepts, processes, and results. Hojiyev highlights that “many scientific terms in Uzbek are formed on the basis of native lexical resources through derivation”. Another important aspect is the accessibility of terminology. Because many derived terms are based on common words, learners can more easily understand their meanings. This connection between everyday language and scientific vocabulary enhances the effectiveness of communication and education.

**Functional and semantic role of derivation:** Derivation is not only a formal process but also a functional tool in scientific language. It allows speakers to generalize and abstract from concrete actions. According to Yule, “derivational morphology plays a key role in expanding the expressive capacity of a language”. In mathematics, this expansion is particularly important. Derived terms make it possible to discuss operations, properties, and relationships independently of specific examples. This contributes to the abstract nature of mathematical thinking. Furthermore, derivation promotes economy in language. Instead of creating entirely new words, languages modify existing ones to express new meanings. This principle of economy helps maintain consistency within the terminology system.

**Comparative analysis of english and uzbek:** A comparison of English and Uzbek reveals both similarities and differences in derivational processes. In both languages, derivation is a primary method for forming mathematical terminology. It enables the creation of precise and systematic vocabularies. However, English shows greater morphological diversity due to its complex history and extensive borrowing. Uzbek, in contrast, relies on a more uniform and transparent system based on suffixation. As a result, Uzbek terms are often easier to analyze morphologically. Despite these differences, both languages achieve the same goal: the clear and efficient expression of mathematical concepts. This demonstrates that derivation is a universal linguistic strategy for developing scientific terminology.

**Conclusion:** The analysis of derivational formation in English and Uzbek mathematical terminology highlights the importance of morphology in scientific communication. Both languages use derivation to expand their vocabularies and to represent complex concepts in a structured way. Although their approaches differ in form and historical background, the underlying principles remain similar. Derivation ensures clarity, consistency, and systematic organization in mathematical language. Understanding these processes contributes not only to linguistic research but also to more effective teaching and learning of mathematics.

**References:**

1. Bauer, L. English Word-Formation. Cambridge: Cambridge University Press, 1983.
2. Crystal, D. The Cambridge Encyclopedia of the English Language. Cambridge: Cambridge University Press, 2003.
3. Hojiyev, A. O‘zbek tili leksikologiyasi. Toshkent: O‘qituvchi, 2002.
4. Katamba, F. Morphology. London: Macmillan Press, 1993.
5. Lieber, R. Introducing Morphology. Cambridge: Cambridge University Press, 2009.
6. Marchand, H. The Categories and Types of Present-Day English Word-Formation. München: C.H. Beck, 1969.
7. Plag, I. Word-Formation in English. Cambridge: Cambridge University Press, 2003.
8. Rahmatullaev, Sh. O‘zbek tili grammatikasi. Toshkent: Fan, 2006.
9. Yule, G. The Study of Language. Cambridge: Cambridge University Press, 2010.