

## ARITHMETIC OPERATIONS IN THE ELEMENTARY MATHEMATICS CLASS AND METHODS OF THEIR STUDY.

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**Bobayeva Ziyodaxon Maxamadjon qizi**

UNIVERSITY OF BUSINESS AND SCIENCE

*non-state higher educational institution*

*teacher of the Department of Pedagogy and Psychology*

<https://orcid.org/0009-0005-5691-3196>

### **Аннотация**

*В данной статье рассматривается вопрос о том, что при формировании умственного мышления у учащихся начального класса с помощью арифметических заданий повышаются их интеллектуальные способности.*

**Ключевые слова:** *арифметика, работа, действия, управления, программа, методика, математика.*

**Аннотация.** *Ушбу мақолада шундай масала ёритилганки бошланғич синф укувчилар учун ақлий тафаккурини шакллантиришда арифметик топшириқлар оркали уларнинг интеллектуал қобиятлари оширилади.*

**Калит сўзлар:** *арифметика, иш, ҳаракатлар, бошқарув, дастур, методология, математика.*

**Annotation.** *This article discusses the issue that during the formation of mental thinking in school-age students with the help of arithmetic tasks, their intellectual abilities increase.*

**Keywords:** *arithmetic, work, actions, controls, program, methodology, mathematics.*

During all four years of primary education, work is underway to form children's concepts of natural numbers and arithmetic operations. From the very beginning, this is done in an indivisible with the wide experience of these concepts analyzed in various cases, with work aimed at mastering by children some properties of numbers, decimal notation, arithmetic operations and calculation techniques based on them. Theory and practice should at the same time, in the course of all work on the effective activity of the program, act in their unity and interrelation. As observations of the experience of implementing the program in the practice of mass schools show, it is this most important requirement of the program that is often violated.

This manifests itself in the fact that, while practicing, say, the skills of oral calculations, teachers often forget about the need to bring the theoretical basis of the operations performed to the children's consciousness, they do not accustom them to ensure that in case of errors in the course of calculations, students return to the consideration of those questions of theory that can help them understand the reason for the error and fix it yourself.

Violation of the requirement to consider theory and practice in their unity is also manifested in the fact that in mathematics lessons, theoretical questions are often put to children in an abstract form, appropriate definitions, "rules", etc. are unlearned in isolation from their practical application. At the same time, we also have to deal with such cases when students are required to know formulations that are either not provided for by the program at all, or should be learned by children much later.

In order to avoid such methodological mistakes that lead to artificial overload of students, it is important to clearly imagine the whole system of working on arithmetic material from grade I to IV, to understand the meaning and place of those elements of theory that are provided by the program.

To ensure that children learn the connections that exist between actions. Teach to apply the relevant knowledge:

a) in calculations (when finding a quotient based on knowledge of the corresponding multiplication case, when finding a difference based on knowledge of the corresponding addition case);  
b) when checking the correctness of the calculations performed;  
c) when solving problems to find an unknown component of actions;  
d) when solving the simplest equations.

To form conscious and strong skills of fast and correct calculations in children. To successfully solve each of these specific tasks of the course, it is necessary not only to determine the content and system of appropriate exercises, but it is advisable to use various teaching methods.

Awareness of the meaning of actions, the connections existing between them, the dependence between the components and the results of actions can be ensured only if the consideration of these theoretical issues is conducted on the solid basis of children's own experience. At the same time, it should be borne in mind that we should talk here not only about the life experience acquired by children in the course of various practical actions with subjects, but also about the experience accumulated while studying mathematics at school.

Familiarization of children with numbers and arithmetic operations is prepared at the first lessons

of mathematics by practical exercises in combining two given sets of subjects, in establishing correspondence between the elements of two sets, in highlighting a part of this set of subjects.

From operations with sets, children gradually move on to counting objects, get acquainted with the first ten numbers of the natural series (their names, sequence), find out by the example of these numbers how each next number in the natural series is formed, learn to compare numbers, find their sum and difference. First, this is done on the basis of performing appropriate operations on sets of objects and counting the elements of the set obtained as a result of combining two sets or deleting part of the set, and then using some techniques of actions on.

When studying addition and subtraction within 10, and then hundreds, children get acquainted with computational techniques based on the use of the properties of actions, as well as on the basis of understanding the relationship between addition and subtraction. At the same time, as already noted, all the work related to the consideration of these properties and various methods of calculation is subject to the task of rationalizing calculations.

The most important task of the first year of study in relation to the formation of computational skills is the assimilation by children of tabular cases of addition and subtraction, which would provide the possibility of automated calculations when adding single-digit numbers and the formation of skills of rapid oral calculations with two-digit numbers.

In the explanatory note to the program, it is emphasized that tabular cases of addition and subtraction should be assimilated by children as a result of exercises in memory, and therefore it is of great importance to create a timely attitude for children to memorize them. It is also necessary to conduct daily training work, without which the desired result cannot be achieved.

Multiplication and division within 100 is considered in Class II. When familiarizing with these new arithmetic operations for children, the teacher can rely on the preparatory work provided by the program for the first grade.

As in the study of addition and subtraction, the consideration of multiplication and division techniques within 100 is based on the preliminary acquaintance of children with some of the most important properties of these actions and the connection that exists between multiplication and division. At the same time, questions arise similar to those that we discussed above in relation to addition and subtraction.

Each of the four arithmetic actions should be firmly connected in the minds of children with those specific tasks that require its application. The meaning of actions is revealed mainly

on the basis of practical actions with a variety of subjects and on the system of corresponding text tasks.

On their basis, the connection between the components and the results of actions, the relationship between actions, the properties of actions under consideration and the mathematical relations being studied are brought to the children's consciousness.

Subsequently, in the course of studying addition, subtraction, multiplication and division, special attention is paid to the consideration of cases of actions with zero. In connection with the study of multiplication and division, the cases of multiplication and division with zero and one are distinguished.

In organic connection with the study of numbers and arithmetic operations, work is also underway to familiarize children with quantities and their measurement. Familiarity with new units of measurement and establishing relationships between them, exercises in converting numbers expressed in different units of measurement, are usually associated with work on numbering.

This principle is implemented in the future - with each expansion of the field of numbers and when considering new cases of actions.

When moving to the study of the topics "Thousand" and "Multi-digit numbers", the main importance is gained by working on the formation of written computing skills. However, it is assumed that in parallel with the consideration of the methods of writing arithmetic operations, the ability to perform oral calculations with numbers within 100 will also be improved all the time.

When disclosing the methods of written addition, subtraction, multiplication and division of numbers, as well as for oral calculation techniques, students are provided with an awareness of the meaning of the operations performed, their sequence, and their available justification. At the same time, at the same time, the ultimate goal should always be kept in mind, which is to develop a certain automatism in writing.

Although the program provides for familiarization of primary school students with numbering and actions on multi-digit numbers within the class of millions, in accordance with the restriction stipulated in the explanatory note, the vast majority of training exercises should include only such numbers and actions that do not go beyond a million.

In parallel with the work on written calculations, children's knowledge about the actions themselves, their properties, the relationship between the actions, the change in the results of actions when one of the components changes, the relationship between the components and the result is generalized and

deepened. Generalization and deepening of relevant knowledge take place on a solid basis of observations systematically conducted during four years of primary education. All this knowledge, as emphasized in the explanatory note to the program, is used to rationalize calculations.

In parallel and inextricably linked with the study of numbers and arithmetic operations, work is underway aimed at forming the concepts of expression, equality and inequality. Numerical expressions, equalities and inequalities are first encountered already in the first lessons of teaching mathematics and then systematically, from lesson to lesson, work on them continues. It assumes a gradual complication of the material not only due to the development of the field of observed numbers, but also due to the complication of the structure of the expressions under consideration and the complication of the types of tasks associated with the use of previously acquired knowledge by children. This system is illustrated in the text of the program by separate, most typical examples. So, in the topic "Ten", it is first provided to familiarize children with the comparison of numbers and records of the form:  $5 = 5$ ,  $6 < 7$ ,  $9 > 8$ ; then read, write and compare expressions of the form:  $5 + 4$  and  $6 + 4$ ,  $7 + 2$  and  $7 - 2$ ,  $3 + 0$  and  $3 - 0$ . The topic "Hundred" contains examples designed to compare expressions of the form:  $10 - (5 + 3)$  and  $10 - 5 - 3$ . When studying the topic "Multiplication and division within 100", expressions of the form are proposed for comparison:  $x \cdot 9$  and  $9 \cdot x$ , connected using the displacement property of the product, and  $7 \cdot 8$  and  $7 \cdot 9$ , where knowledge of the connection of multiplication with addition can find application.

In addition to the task of forming concepts of expression, equality, inequality, the corresponding exercises serve, thus, the task of consolidating both computational skills and those elements of arithmetic theory that were considered in the study of actions.

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