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CALCULATION METHODS IN THE MATHEMATICS OF PRIMARY SCHOOL

At Ukrainian elementary school, students master spoken and written techniques of addition, subtraction, multiplication, and division within a million. According to the Core Curricula, created under the direction of O. Savchenko (NUS 1) and under the leadership of R. Shiyan (NUS 2), students in the 1st - 2nd grades must have computational skills of oral addition and subtraction within 100; in grades 3 – 4 – skills of oral addition and subtraction of round numbers within a million, multiplication and division within a thousand and skills of writing addition and subtraction, multiplication and division by one-two-digit number. Obviously, to perform mental calculations, a student may use not one method of calculation, but several theoretically different methods of thinking.

The logic of expanding the content of teaching mathematics in elementary school allows actualizing the possibility of gradual introduction of certain methods of calculation as students become familiar with certain theoretical knowledge. Thus, when studying the addition of single-digit numbers with the transition through the digit within 20, in the first stages there is a transfer and change of the correspondingly changed conditions, known to the students from the "Ten" concentrate, the reception of addition by parts. Having mastered this mode of action, students no longer have problems with calculations within 20, and may have mastered the composition of the numbers of the second ten. Therefore, in the next stage, there may be a case where children will no longer resort to submitting a second supplement in the form of a sum of convenient additives, which realizes the reception of the addition by parts, and immediately, based on the composition of the number, combining the parts as a whole, will reproduce the result. It should be noted that at the present stage of development of elementary mathematical education, the emphasis

on mechanical learning of addition tables within 20 is not put. On the contrary, the program focuses the teacher on the formation of computational skills of the students, and it can be expected that when adding to the parts, students can spontaneously remember the results of sums of single digits, which is also the composition of the numbers of the second ten. Therefore, in the next stage of learning, understanding the essence of the arithmetic of adding as a union of two sets without common elements (combining parts into a whole), students may no longer resort to adding parts.

In addition, within ten first-graders found that it was not convenient to add a bigger number to a smaller one, and learned how to perform calculations in such cases using the permutation law of addition. The technique of calculation on the basis of the permutation law of addition can be postponed without change to cases of addition within 20, when a smaller number is added to a bigger one.

As far as mastering the dependence of amounts on the change of one of the additions, it is possible to acquaint students with the reception of rounding when adding. In this case, one of the additions – the number 5, or 6, or 7, or 8, or 9, is replaced by a close circular number 10, and the calculation is performed with the number 10, and then subtract the difference between the number 10 and the number that was replaced by 10.

Practice shows that even at this stage of study – within 20 there is a part of the students who learn this technique and consider it the most convenient for themselves.

It should be noted that there are classifications of computational techniques of M. Bantova and S. Skvortsova.

M. Bantova based her classification on the theory on which the technique is based and distinguished six groups of computational techniques. Generally adhering to the classification of computational techniques by M. Bantova, S. Skvortsova distinguishes the same groups of computational techniques, but somewhat differently considers the groups of computational techniques of each class.

In our study, following M. Bantova and S. Skvortsova, we classify calculation methods according to their theoretical basis and also distinguish six groups of methods of calculation:

1. Techniques, the theoretical basis of which is the essence of arithmetic.
2. Techniques whose theoretical basis are the properties of arithmetic actions.
3. Techniques whose theoretical basis is the interconnections between the inverse arithmetic actions.
4. Techniques whose theoretical basis is the dependence of the results of arithmetic on the change of one of the components.
5. Techniques whose theoretical basis is the problem of numbering.
6. Techniques, the theoretical basis of which are the rules.

The proposed classification applies to both oral and written computational techniques.

In our study, following the groups of methods of calculation identified by M. Bantova and S. Skvortsova, we attributed to each group of techniques certain techniques that are studied in elementary school.

Obviously, the addressed methods are offered in the course of mathematics in a certain sequence, following the logic of expanding the content of learning. Therefore, in the Concentration “Ten” when performing calculations, students should have in the arsenal certain ways of thinking. They are as follows: 1) They can act on the basis of knowledge of the composition of the number and the essence of the arithmetic actions of addition and subtraction (the first group of techniques); 2) When adding and subtracting number 1, they can act on the basis of knowing the order of the numbers in the natural sequence (the fifth group of techniques); 3) When adding and subtracting the numbers of the first five, children can perform the calculations in parts (the sixth group of techniques); 4) Addition of numbers 6-9 can be carried out on the basis of the permutation law of addition (the second group of techniques); 5) One can subtract the numbers 6-9 based on the correlation of the arithmetic actions of addition and subtraction (the second group of techniques).

In addition to the computational techniques we have analyzed, most of which are compulsory in elementary school mathematics, we also consider the need of the methods of rational calculations in our research perspective.

In accordance with current tendencies in mathematical education, emphasis is placed on the formation of different methods of calculation of students so that they

can consciously choose the method of calculation that is most convenient for themselves.