

METHODS FOR SOLVING COMPLEX EQUATIONS

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Abstract : This article is about a method for solving complex problems. Mathematics has a significant impact on the development of technology, economics and production management. An equation is the simplest and most common form of a mathematical problem.

Keys words: equation, algorithm, solution, subject, goal, learning, mathematics.

Equations in the school course of mathematics occupy a leading place. They take more time to study than any other topic. Indeed, the equations not only have an important theoretical significance, but also serve purely practical purposes. The overwhelming majority of problems about spatial forms and quantitative relations of the real world come down to solving various types of equations. Mastering the ways to solve them, we find answers to various questions from science and technology (transport, agriculture, industry, communications, etc.).

The relevance of the research topic: the solution of equations has always been and still remains an acute problem in the methodology of mathematics, since, despite intense searches and unconditional achievements in this area, the degree of assimilation of the material by students is low. During the period of study in elementary school, basic knowledge, skills and abilities are formed, on the basis of which the further study of mathematics will be built. The primary school occupies a decisive place: the problem of succession may not arise only if primary education is properly organized. In other words, the primary school has the highest responsibility for all further teaching of mathematics. That is why it is so important to give students the most complete information about the essence of the equation and show them how to solve it.

Purpose of the work: to theoretically substantiate and test in practice the effectiveness of using the method of solving equations in teaching younger students, based on increasing cognitive interest in mathematics, the connection of mathematics with other sciences (on the example of a set of tasks for the third grade).

The relevance and purpose of the study determined the following tasks:

1. To study the state of the problem, based on literary sources and school practice;
2. To study the features of teaching solving equations by younger students;
3. Develop a set of lessons in mathematics in elementary school on the topic "Equations. Solving equations", check the effectiveness of the lessons. To solve the tasks set, the following research methods were used: the study of psychological, pedagogical, methodological literature on the research problem, programs, textbooks, teaching aids in mathematics for elementary and secondary schools; summarizing the experience of primary school teachers.

Practical significance of the research results: The scientific and practical significance of the work is determined by the fact that the theoretical provisions, specific material, lesson notes, proposed exercises, the conclusions of the study can be used by primary school teachers, mathematics teachers.

math equation multiplication

Chapter 1

1.1 Equations and their solutions

An equation is the simplest and most common form of a mathematical problem. Let's take two numerical expressions and put an equal sign between them. We will get numerical equality. It will be true or false depending on whether the values of the given numeric expressions are equal or not equal. Classical examples are the equalities $2 + 2 = 4$ and $2 + 2 = 5$

Solving an equation means finding all its roots or making sure that there are no roots. For example, let's establish whether the expression $m + 0 = m$ is an equation with one unknown. The expression under consideration is an equality containing an unknown number denoted by the letter m . If you want to find this unknown number, then the statement in question is an equation. If we consider this expression as a record of the fact that adding the number 0 to any number gives a sum equal to the original number, then the statement is not an equation. The equation $m + 0 = m$ has any number of solutions: any number m is its solution.

The equation $a + 3 = 4 + a$ has no solutions. The equation $a + 3 = 4$ has one solution: $a = 1$ [1]

If you want to solve an equation, then you need to find all its roots or prove that there are no roots. Note that when we say "equality of two numerical expressions", we do not at all assert that these two expressions are really equal. You can connect two numerical expressions A and B with the sign "=" and talk about the resulting equality $A = B$, regardless of whether the statement " $A = B$ " formulated by us is true or incorrect.

Let's take two literal expressions and connect them with an equal sign. We get an equation. Thus, the equation in the first approximation can be understood as the equality of two literal expressions.

Solve the equation - find its root:

- the equation is solved in micro steps, one line - one action is done
- written strictly in a column
- in each line there is only one = sign, since equals should be obtained
- in each line before checking there is one unknown, written with the letter
- after finding the root of the equation, this line

u stress for verification

- in the part of the check, the unknown is not written, instead of it they write a number - the root of the equation

Algorithm for solving a simple equation:

1. Underline the unknown and remember the name of the action component in the place of which the unknown number is located.
2. Remember the rule for finding this component.
3. Solve a simple equation according to the voiced rule in one step.
4. Check the correctness of the solution - rewrite the entire equation, substituting the root of the equation instead of the unknown.
5. Write down the check answer - count everything on the left side, write equals under equals, and write the resulting number on the left side before equals. It should be the same as the number on the right side of the equation.

1. Underline the unknown and remember the name of the action component in the place of which the unknown number is located

$$12 \times X = 36$$

The second multiplier is unknown.

2. Remember the rule for finding this component.

To find the unknown factor, you need to divide the product by the known factor.

3. Solve a simple equation according to the voiced rule in one step.

$$X \div 36: 12$$

$$X = 3$$

4. Check the correctness of the solution - rewrite the entire equation, substituting the root of the equation instead of the unknown.

$$12 \times 3 = 36$$

$$12 \times X = 36$$

$$X \div 36: 12$$

$$X = 3$$

$$12 \times 3 = 36$$

$$36 = 36$$

5. Write down the check answer - count everything on the left side, write equals under equals, and write the resulting number on the left side before equals. It should be the same as the number on the right side of the equation.

$$36 = 36$$

Algorithm for solving a complicated equation:

1. Find and immediately simplify in the expression what is possible - to calculate the action that is immediately easily solved without additional rules.
2. Underline the unknown and remember the name of the action component in the place of which the unknown number is located
3. Remember the rule for finding this component.
4. Solve a simple equation according to the announced rule in one step.
5. Verify the correctness of the solution - rewrite the entire equation, substituting the root of the equation instead of the unknown.
6. Write down the answer of the check - count everything on the left side, write equals under equals, and write the resulting number on the left side before equals. Count everything on the right side and write down the resulting number after both numbers should be equal.

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