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ABOUT THE IMPORTANCE AND PLACE OF MATHEMATICAL PROBLEMS IN MATHEMATICS LESSONS

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Annotation:
The article is about a problem, a mathematical problem, that solving a problem develops logical thinking, a broad worldview, creative initiatives, understanding, intelligence, sensitive abilities and creates practical and necessary skills and competencies in them, the abstractness of mathematical problems, the logic of their form and content. information is given that it is different from the problems of other sciences due to its connection and the unique complexity of the method of solving, that the solving of such problems has attracted the attention of scholars for centuries, and that they have left wonderful opinions about the problem and its essence.

Keywords: problem, logical thinking, ability, number, expression, simple, content, hypothesis, non-standard, educational, educational, developmental

A problem is something that needs to be solved on the basis of certain knowledge and thinking. The concept of a problem is a method of imparting knowledge to pupils and students in certain subjects in general secondary schools, special secondary educational institutions and higher educational institutions, strengthening knowledge, checking and creating skills in them. one is understood. Each issue, along with clarifying the content of the topic being studied, introduces a person to a new event and its internal logical connections. He systematizes and consolidates the knowledge he has acquired in science and is interested in understanding its content by connecting it with life events. Their solution gives people simple messages and helps them to understand the content of neighboring sciences. Solving problems develops their logical thinking, broad worldview, creative initiatives, understanding, intelligence, sensitivity skills and creates necessary practical skills and competencies in them. Problems are also the basis of teaching mathematics.

Mathematical problem means finding a new number-expression by performing operations on two or more numbers-expressions. Mathematical problems cover mainly numbers, quantities, relations and short life events corresponding to them and express them in words.

Mathematical problems differ from problems of other sciences due to their abstract nature, logical connection of form and content, and unique complexity of solving method. Solving such problems has attracted the attention of scholars for centuries. They have made excellent points about the issue and its essence. Let's get acquainted with some of them:

1) Arithmetic is a school of thinking, so solving problems arithmetically does not lose its value. (I. Ya. Depman)

2) For a person learning algebra, it is more useful to solve one problem in three or four ways than to solve three or four problems in one way. This is how experience is gained (U.U. Sawyer)

3) Divide the problem you are studying into as many parts as possible to make it easier to solve (R.N. Descartes)

4) It is more interesting to solve difficult and complex problems than simple and easy problems (E.O. Plato)

5) It is not enough to understand the problem, the desire to solve it is also necessary. You cannot solve a difficult problem without a strong desire, but if you have it, you can. If there is a desire, a way will be found (D. Poya)

6) Don't try in vain to solve any problem by relying on your mind alone; ask nature, nature keeps all its secrets, it will definitely and satisfactorily answer your question (N.I. Lobachevsky)

7) A major scientific innovation provides a solution to a major problem. There is a particle of innovation in the solution of every problem (D.Poya)

Based on the above points, to the readers, students on the issue

It is appropriate to give a note on their performance as follows:

1. Read the problem carefully and think about what each number in the problem means. Try to imagine the situation in the problem.

2. If the problem is complicated, write its condition briefly, divide it into parts, draw a diagram or a picture about it.

3. Read the problem a second time and say it to yourself.

4. Think about what you need to know to answer the question of the problem, etc.

In fact, none of the jobs 1-4 are elementary jobs.

Mathematical problems can be approached as a means of teaching in two ways:

The traditional approach to the problem: Analysis of the conditions of the prepared problem → Determination of the method of solving the problem → Solution process → Formal comparison of the obtained result with the reference answer.

Method of approaching the problem as a problem (Poya system, Singapore): Analysis of the problem situation → Problem statement → Search for insufficient information and form hypotheses (scientific predictions) → Test the hypotheses and gain new knowledge about the problem situation → Change the problem into a problem turn → Search for a way to solve the problem → Solution process → Check the obtained result → Justify the correctness of the solution.

It can be seen that in the traditional approach, the student's problem-solving educational activity has a reproductive character, and he manifests himself as a doer. Research elements are revealed only when analyzing the conditions of the problem. Solving standard problems - solving non-standard problems that are rare in everyday life. Therefore, the authors of textbooks for all levels should approach some educational and especially practical issues as problematic issues.

Dealing with more complex logical, interesting and non-standard problems allows students to deepen their understanding of science, repeat previously learned concepts and learn familiar algorithms in an interesting way.

When talking about the importance and place of a mathematical problem in mathematics lessons, it is necessary to consider the following three stages:

1) The study of theoretical parts of mathematics is carried out in order to solve mathematical problems.

2) Teaching mathematics is carried out together with solving mathematical problems.

3) Learning mathematics is done by solving problems or examples.

Solving mathematical problems and examples not only forms students' mathematical activity, but also serves to acquire and apply knowledge of this subject.

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In modern didactics, A.D. Semushin, K.I. Neshkov and Yu.M. Kolyagin divide the functions of problems and examples into the following types:

1) Educational function of the issue

2) Educational function of the issue

3) Developmental function of the issue

4) The function of the investigation character of the issue

The educational function of the problem expands the worldview of students, educates them in the spirit of love for work. The developmental function of the problem forms logical thinking activities in students. As we know from psychologists, the student's logical thinking activities are carried out through thinking actions - comparison, analysis, synthesis, waxing, concretization, abstraction, classification. The developmental function of the problem in the mathematics course not only develops students' skills in the correct use of all methods in the methodology of teaching mathematics in the process of solving a problem or example, but also forms their ability to think clearly about mathematical judgments and conclusions and develop problem-solving skills. develops.

Classification of problems begins with elementary mathematics. In elementary mathematics, problems are divided into simple and complex problems. If the problem is solved by one operation, it is called a simple problem. If the problem is solved by more than one operation, such a problem is called a complex problem. At the same time, as a result of regular familiarization with problem-assignment classifications with insufficient information and excessive information, it has a great impact on the growth of students' creative activity, the development of independent thinking skills, and the growth of logical thinking. it's a secret. We will approach problems-assignments with insufficient information as follows: a) First, we will introduce ways to introduce textual problems that require numerical data. In such cases, the full text of the issue is given.

Only numerical data is selected by the reader. When the teacher introduces the students to such problems, first of all, while the numerical data given at the end of the problem text is given, some of the numerical data are not given in the condition of the problem (empty cell or three dots), the problem-tasks are referred to the students. It works well. Such assignments are connected with students' formulation of problems and their modification. Because as the student develops the skill of creating a problem, the student will later distinguish between what is given and what is sought in the text of the problem. At this time, numerical data is hidden (more precisely, isolated) issues are recommended. Introducing simple summation problems can be included in reinforcement lessons. Below are examples of problems.

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