Text problems

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Annotation: In this article, the concept of textual problem, types of textual problems, modeling of the process of solving textual problems, methods of solving textual problems, non-standard problems, logical problems, economic and statistical problems in elementary grades, compilation of economic and statistical problems in elementary grades, and a brief description of them there is talk about teaching how to write and solve conditionals.

Key words: problems related to finding the content of arithmetic operations, problems related to finding the unknown component of the operation, problems related to the relation of several units (or several times), problems related to proportional relationships of quantities, simple problems, content issues.

In primary education, great attention is paid to solving textual problems. Textual problems are of great importance in teaching mathematics, because such problems ensure the connection of mathematics with life, increase interest in science, and teach to create a mathematical model of life situations. By solving problems, students acquire new mathematical knowledge and prepare for practical activities. Solving problems allows them to develop their logical thinking. Textual problems are also important in personal education of students. A primary school teacher should have a clear idea of the structure, types and methods of solving textual problems.

A textual problem refers to a task related to finding an unknown quantity based on numerical data about a life situation.

Any textual problem consists of two parts: conditions and requirements. In the condition, information is given about objects and some quantities characterizing the given object, about the known and unknown values of these objects, and about the relationship between them. .

The requirement of the problem is to show what needs to be found. The requirement of the problem is in the form of a question or command. Mathematical problems are divided into simple and complex problems. Problems that can be solved with one action are included in the sentence of simple problems. Problems that are made up of several simple problems and therefore solved using two or more actions are called composite problems. Two inverse problems can be created for any simple problem, in each of them the number to be sought is considered to be known, and the number that is known under the condition of the correct problem participates as the number to be sought. For example, 5 girls were playing in the yard, 2 of them went home, how many girls remained in the yard? 2 inverse problems can be made to the problem. The first one is, "Several girls were playing in the yard, 2 of them went home, and 3 girls remained in the yard.

How many girls were in the yard before?" The second said, "5 girls were playing in the yard, some of them went home, and 3 girls remained in the yard. How many girls went home?" This issue can be viewed as the opposite of both issue 1 and issue 2. Different types of problems are given in elementary grades: non-standard problems, problematic problems, problems with excessive information, problems with insufficient information, problems with multiple solutions, logical problems, etc.

Primary school teacher
1. What is the purpose of each issue?
2. What is the place of this issue in the system of issues?
3. Structure of text problems in the mathematics course of elementary grades
4. The types of text problems that are passed in the mathematics course of elementary grades

5. The stages of solving text problems in the mathematics course of elementary grades

6. To analyze the issue

7. Different methods of problem solving

8. To be able to use different methods of checking the solution of the problem

9. He should know how to draw conclusions from the solution of problems.

Types of text problems

It is convenient to divide the main types of simple problems as follows for use in primary classes: problems on finding the content of arithmetic operations: problems on finding the sum, remainder, problems on finding the sum of the same divisors, problems on division. Issues related to finding the unknown component of the operation (additive, subtractive, subtractive, multiplicative, divisor, divisor). Problems related to the relationship of several units (or several times): directly or indirectly expressed problems of increasing and decreasing the number by several units, problems of differential comparison. Problems related to proportional relationships of quantities. Also, problems related to multiplication, problems related to finding the sum of two products, problems related to finding the difference between two divisions, problems related to uniting by the ratio method, problems related to proportionality, finding the unknown according to the difference of two problems, problems about finding speed according to a given distance and time of movement, problems about finding distance according to speed and time of movement, problems about meeting motion, problems about mixing, etc. Briefly, they can be divided into the following types: problems related to finding the content of arithmetic operations, problems related to finding the unknown component of the operation, problems related to the relationship of several units (or several times) more, problems related to proportional connections of quantities.

All types of simple problems are necessary for the student for the following purposes will be:

1) Getting to know the structure of a mathematical problem, i.e. getting to know its conditions, given quantities, question-searched quantities, problem solution, answer and other terms

2) Learning to consciously choose the actions to be performed to answer the problem question (problems help to reveal the meaning of the actions)

3) To understand elementary functional relations between the quantities included in the condition, connections between the components and results of actions.

Working on changing the text of simple problems helps the student to acquire more abstract concepts. For example, this "Princess bought 8 notebooks." The notebook costs 750 soums. How much did the princess pay? The condition of the problem can be changed with a demand such as, for example, the price of the notebook is 750 soums, and you know how much 8 darts cost.

Preparing the student for solving textual problems is carried out in three stages. In the first stage, the teacher conducts preparatory work for solving problems of the considered type, in which students find connections that serve as a basis for choosing appropriate actions in solving these problems. In the second stage introduces the students to the solution of the problems of the considered type. In this, the students learn to determine the connection between the given numbers and the unknown number, and choose arithmetic operations based on this. forms.

Conducting special exercises in the preparation process will give good results.

1. In many cases, they perform actions on the sets until the issues are resolved. For example, before introducing the solution of many simple problems, it is necessary to give exercises on operations on sets. In this case, the elements of the set must be concrete objects (sticks, papers, cut geometric figures, pictures, etc.) there will be preparatory exercises such as dividing a part, combining sets of equal power in multiplication, dividing a set into subsets of equal power in division.

2. Arithmetic problems are related to quantities (length, mass, surface, volume, speed, time, etc.). Such a problem introduces a new quantity.

3. When solving many problems, it is chosen based on the existing connections between actions and given quantities.

4. Solving complex problems is reduced to solving a number of simple problems.

Modeling the process of solving text problems

When solving text problems, the problem is translated into mathematical language, this is called modeling. A mathematical model of text problems is a numerical expression of its solution (a sequence of operations) or an equation. This depends on whether the problem is solved by an arithmetical or algebraic method.

There are three steps to problem solving modeling:

1. Converting the condition of the problem to the language of mathematics: in this case, the connection between the given and sought quantities is expressed in a mathematical way;

2. Solving a structured expression or equation

3. Interpretation: turn the answer into the language of the given problem

Problem models are generally schematic and labeled.

Schematic models are divided into object and graphic models.

In models with objects, the condition of the problem is shown using objects or live (by role-playing).

Graphical models include pictures, conditional images, drawings or diagrams.

Character models are created using words and mathematical symbols. A word model is a shorthand version of the problem. This entry can also be in tabular form.

Models constructed using mathematical symbols are the expression and solution of this problem.

Methods of solving text problems.

To solve the problem, you need to listen to it and read it independently.

In elementary grades, problems are solved using the methods of analysis and synthesis. Analysis and synthesis are cognitive processes, types of mental activity, and they are logical ways of generating new knowledge in science.

In mathematics, analysis is basically a sequence of ideas that leads from the claim to be proven to claims that have been proven or accepted before. vo is the path that indicates the formation. The synthetic analysis of the problem is understood as the development of reasoning in which, by combining two pieces of information, it is determined what can be known from this information, after that, the newly found information is combined with other information, and this work continues until the question of the problem is answered. The analytical method of problem analysis consists of such a chain of considerations that the question posed in the problem is at the beginning of this chain. The necessary quantities for the answer to the question of the problem are determined, and these quantities are found through the quantities given in the problem.

Matter. The workshop made as many suits as there were dresses. 3 meters of material was used for each shirt and 4 meters for each suit. If 24 meters of material were used for dresses, how much material was used for suits?

A short notation of the problem can be written in the table:

	For 1 garment	Number of clothes	Material total
A shirt	3m	The same	24 m
suit	4m		?

Analytical analysis of the problem goes from the question of the problem to the numerical data

1. What is required to know in the problem?

2. How many materials were used for costumes.

3. Can it be known immediately?

4. No

5. Why?

6. We do not know the number of suits

7. There are as many suits as there are dresses. It is possible to know the number of dresses. Because it took 3 meters for one shirt, 24 meters for all.

8. How do we find the number of dresses?

9. We divide 24 by 3: 24:3=8 number of dresses, and also number of suits, because they are equal in number

10. Now what do we find?

11. We find the material used for all suits by multiplying 8 by 4: 8 - the amount of material used for all suits

12. What is the general expression of the solution to the problem?

13. 32 (8)

It can be seen that the problem analysis, solution plan and solution are being implemented at the same time

A synthetic analysis of the same problem, that is, the path from the numerical data to the problem question, is as follows:

• We look at the table and determine what can be determined according to the given information. What can be determined from the first row of the table?

• The number of dresses can be found from the material consumption of 3 meters for one dress and 24 meters for all dresses.

• How do we find it?

• Divide 24 by 3

• Is finding this necessary for the solution of the problem?

• It is necessary because the number of dresses is equal to the number of suits. If the number of suits is found, it will be possible to find how much material was used for all the suits

• How can we find out how much material was used in the costumes?

• Multiplying 4 by the result of the first action, i.e. by multiplying by the number of suits

• Does this answer the question of the issue?

• Yes.

After the solution plan is defined, the steps such as writing the solution, stating the answer and checking the answer are followed.

1. Arithmetic method

In the arithmetic method, the answer to the question of the problem is obtained as a result of performing arithmetic operations on numbers. Different arithmetic methods of solving the same arithmetic problem are based on the relations between givens, between givens and unknowns, between givens and sought after, or the sequence of performing these relations when choosing operations. it differs with kets.

Problem. A worker made 120 parts in 8 hours, how many parts does he make in 5 hours?

Method 1. 120:8=15, 15 =75. Method 2. 8:5=1.6 (times),120:1.6=75. Method 3. 8 hours = 480 minutes. 480:120 = 4 (min), 5 hours = 300 minutes, 300:4 = 75 details

2. Algebraic method

Algebraically, the answer to the question of the problem is found by creating and solving an equation. It is possible to create different equations for the same problem depending on the choice of unknowns to mark with letters, the ways of reasoning.

Matter. A bowl and two bowls take 740 g of water. A bowl takes 380 g more water than a bowl. How many grams of water are in the cup?

Method 1. Let x g of water go into the cup, then (x-380) g of water goes into the cup, 2 g of water goes into two cups (x-380), and (x+(x-380)) 2 g of water goes into the cup and the cup. The cup and Since 740 g of water goes into two bowls, we have the equation (x+(x-380) 2=740). Solving it, we find that 500 g of water goes into x=500 g bowl.

Method 2. Let x g of water go into the cup, then (x+380) g of water will go into the cup, since 2x g of water will go into two cups, the cup and two cups will go into ((x+380)+2x) water. According to the problem, the cup and 740 g of water goes into two bowls. So we get the equation (x+380)+2x=740. Solving it, we find that x=120. x+380 is represented by putting its value in place of x and we find that 500 g of water will go into the cup.

Method 3. Let x g of water go into a bowl, y g of water into one bowl, then 2y g of water will go into two bowls. (x+2y) g of water goes into the cup and two cups, and if x g of water goes into the cup from the other side, then (x-380) g of water goes into the cup. Solving this system, we get the answer x=500 g.

Non-standard issues

Issues whose solution procedure is implemented on the basis of certain legal provisions are called standard issues.

Such problems include creating an equation with the help of arithmetic operations, raising it to the level, extracting roots, finding the roots of a quadratic equation, calculating the term of an arithmetic, geometric progression, determining the faces of geometric figures, calculating the differential of a function, problems related to calculating the derivative of a function, the initial function, pre-ma It is solved with the help of known rules, formulas, theorems, facts.

Matter. Tourists plan to travel the distance from the river to the tourist base in 6 hours. But after walking for 2 hours, they reduced the speed by 0.5 km/s. As a result, they arrived at the tourist base 30 minutes late. Find the speed of the first wave of tourists.

The problem is a practice problem with text. There is no predetermined resolution procedure for such issues. When solving a problem, rule-word, rule-definition, rule-fact, rule-theorem, rule-formula, that is, do not obey any of the rules of solving standard problems. There is no typical way to solve such problems. Such an issue is included in the category of non-standard non-standard issues.

1. Jasur, Nadir and Tahir collected money and bought a ball for soums. Each of them contributed no more than half of the money of the other two. How much money did the brave man add?

Solving. Let it be the money added by the brave, the money added by Nadir, and the money added by Tahir. In that case

$$j + n + t = 2850, \qquad \begin{cases} j \leq \dfrac{n+t}{2} \\ n \leq \dfrac{j+t}{2} \\ t \leq \dfrac{j+n}{2} \end{cases}$$

It follows from the first inequality of the system: $2j \leq n + t$. If we add the third inequality to the second inequality of the system, we get $2j \geq n + t$ .This follows from two inequalities: $2j = n + t$. So, $j + 2j = 2850, 3j = 2850, j = 950.$, Thus, Jasur added 950 soums of money.

Logical issues

Solving logical problems plays an important role in the development of students' thinking. The difference between a logical problem and an ordinary arithmetical problem is that it is solved completely or partially by reasoning without arithmetical operations. At first, it is difficult for students to ask logical questions. For example, "1 kg of stone is heavy or 1 kg of cotton", "Seven candles are burning, if two are extinguished, how many will remain?

Issues

1. A beetle climbs up 6 meters and descends 5 meters every day along the gorge. If the height of the tree is 10 m, how many days will it climb to the top of the tree?

2. There is a certain amount of water in the pool. On the first day, that amount of water is poured. On the next day, as much water is poured as there was the day before. If the pool is half full in nine days, how many days will it be paid?

3. Out of nine identical coins, one is a counterfeit. The counterfeit coin is slightly lighter than the others. How can you detect a counterfeit coin by only weighing it twice on a scale?

4. Geese were flying in the sky, and one goose standing below said to them:

Hey, hundreds of geese, where are you going?

One of the geese answered him:

— We are not a hundred, if we add so many geese to us, if we add geese equal to half of us, if we add geese equal to half of them and you, we will be a hundred. .How many geese were there in the beginning?

5. How do two parents and children divide three apples whole?

Economic and statistical issues in primary grades

Problems with economic statistical content are problems that contain a certain economic or statistical concept or information that illuminates it. The simplest economic concepts that can be studied in an elementary mathematics course are: economy, productivity, such as product price, quality, profit, basic concepts of statistics: observation and data collection, sorting of collected data, variation series, arithmetic mean, frequency, relative frequency, tables and diagrams consists of.

The external structure of the Constitution describes its relationship with other sources of law, the totality of relations, its place and role in the legal system and its significance in the system of social and normative regulation in society.

The article presents the role of family, forming system of upbringing, traditional-educational system and traditions in Uzbekistan.

In an article consistently revealing the principles of the Bologna process for measuring the quality of education, the dynamics of internationalization and the logic of integration in European higher education and in Eurasia.

Problem: The leftover bread in the school kitchen for 1 day was 1 kg. If this amount of bread is wasted every day, how much bread will be wasted in 210 school days? How many days can an average family eat so much bread?

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