# TYPES AND PURPOSE OF TEXT PROBLEMS IN MATHEMATICS 

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Abstract: This article discusses several types of text problems in mathematics. Examples of solving such problems by different methods are given. The significance of this topic in the mathematics course of the primary school is investigated and what difficulties students have when studying it.

Keywords: mathematics, teaching mathematics, text problems, types of text problems, introduction of several variables.

Mathematics is one of the most difficult academic disciplines for students. At the same time, there are students with pronounced mathematical abilities. The teacher faces a difficult task - to teach both groups of children (both those who master mathematical material well and those who have certain difficulties with this), equally qualitatively and in full. Research revealed that the greatest difficulty for a significant percentage of students in grades 5-9 is the solution of text problems in mathematics.

A text task is such a task, the condition of which is formulated in a natural

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language - that is, in the form of a text. In some methodological literature on mathematics, one can find the following definition of the concept of a text problem "Problems in which the relationship between the data and the desired ones is not explicitly expressed, but formulated in words, just like the question of the problem, are called problems proper or problems with text" [ 1, p. 202]. In any text task, it will be required to perform some action. In some, it is required to give a quantitative description of some element of the proposed situation, in others - to establish a relationship between the elements (or its absence), or to determine the type of this relationship. Thus, the solution of the problem should be reduced to finding the value of certain quantities by means of certain logical reasoning and calculations. For example, find time, distance, speed, mass of an object or its quantity [1].

It should be noted that in the methodology of teaching mathematics there is no single classification of text problems. However, the most common is the following classification:

- tasks for movement (oncoming traffic, movement in one direction, movement along the river, etc.);
- tasks for work;
- tasks for mixtures, alloys, concentration;
- Interest tasks. [2, p. 39]

It is worth noting that absolutely every text task in its structure has:
Input data and their properties,
Relationships between known data,
An indication of the need to find what you are looking for
The required quantities and their properties,
Relationships between known data and sought ones [2].
Depending on the complexity of the problem, differrent methods of solving
can be used. For example, a solution by introducing one or two variables. Consider an example of a text problem and solve it in two ways:

Example 1. Water is drained from the tank through 2 pipes at a speed of $330 \mathrm{l} / \mathrm{min}$. We know that one pipe releases more than the other $50 \mathrm{l} / \mathrm{min}$. How much do 2 pipes drain each?

Let's evaluate the conditions of the problem: The amount coming out of 2 pipes is about $300 \mathrm{l} / \mathrm{min}$, so if each pipe has the same width, then the speed will be about $150 \mathrm{l} / \mathrm{min}$ for each pipe. But the speed of one pipe is much faster 50 $1 /$ min than the other, so we expect the answers to be around $125 \mathrm{l} / \mathrm{min}$ and 175 1/min.

Let's solve this problem using one variable.

$$
(x+50) 1 / m i n
$$

Solution: let be the speed of the slower pipe (v). Find the speed of the faster pipe.

Together they release:

$$
x+(x+50)=330
$$

We get that
$2 x+50=330$
$2 x=280$
$x=140$
$140+50=190$
Thus, the speed is $140 \mathrm{l} / \mathrm{min}$ and $190 \mathrm{l} / \mathrm{min}$ for the first and second pipes, respectively.

Our estimate turned out to be approximately correct. Together the two pipes give speed $330 \mathrm{l} / \mathrm{min}$ and differ by in $50 \mathrm{l} / \mathrm{min}$, so we can be sure that our answer is correct.

Answer: $140 \mathrm{l} / \mathrm{min}$ and 190 1/min

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Text tasks are a key means of forming not only basic mathematical concepts and mathematical thinking, but also the ability to build mathematical models of real situations and phenomena in general. Using the example of a text problem, the teacher can clearly demonstrate to students the application of mathematical knowledge in practice. Since many students ask themselves the question "how will this be useful to me in the future?". Text problems describing real life situations help project the benefits of studying mathematical disciplines, for example, for domestic, agricultural, economic and other uses. Depending on the type of text task, you can choose a specific life problem. Calculation of the time of arrival at the place - tasks for movement, calculation of productivity tasks for work, calculation of the cost and economic dependence of one indicator on another - tasks for interest, and so on.

When solving mathematical problems, students not only acquire mathematical knowledge, but also improve their mathematical education. At the same time, when solving text problems, they can apply mathematical knowledge to many practical needs, because most of these problems are dictated by practice, everyday life. For example, almost all design calculations have to solve mathematical problems. Also, without the involvement of the mathematical apparatus, it is impossible to study and describe processes and their properties. Mathematical problems are solved in physics, chemistry, biology, strength of materials, electrical and radio engineering, especially in their theoretical foundations, etc.

This means that when teaching mathematics, students should be offered tasks related to related disciplines (physics, chemistry, geography, etc.), as well as tasks with technical and practical, life content [3].

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