THE IMPORTANCE OF VISIBILITY IN TEACHING MATHEMATICAL REASONING PROBLEM SOLVING

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Abstract:

This article is written about improving students' knowledge, skills and abilities in solving logical problems in elementary mathematics classes. course, a demonstrative method of solving logical problems is considered. Differences in working on some issues in the upper class and in the primary class are shown.

Keywords: mathematics, problem, practical, ability, thinking, skill.

Introduction

Students encounter the problem on the first day of classes at school. In order to determine what kind of life experience and knowledge students have, the teacher addresses the student through the simplest question. For example: "You had four apples, you took one more. How many apples do you have?" Mathematical problems help students to correctly form mathematical concepts, to understand the environment that surrounds them, and at the same time to develop the child's thinking to solve problems. By solving one of the most important problems, the student learns the four arithmetic operations and their properties. Mathematical language develops. in short, the problem is an important link connecting theory and practice.

Appropriate simple problems are used to reveal the content of arithmetic operations, connections between operations and operation components, and to get acquainted with connections between various quantities. Simple problems serve as a basis for the formation of knowledge, skills and abilities necessary to solve complex problems. Problems are a useful tool for developing children's thinking skills and usually involve some knowledge. The search for this knowledge requires the problem solver to resort to analysis and synthesis, comparing facts, summarizing, etc. Teaching these ways of knowing is one of the important goals of teaching mathematics. When solving problems, interest in the subject develops, independence, freedom, demandingness, hard work, and striving for the goal develop. Children get acquainted with the structure of the problem in the second or third activity. They learn that there is a condition and a question in the problem, it is emphasized that the condition of the problem should have at least two numbers. Working on a problem begins with mastering its content. In order to understand the content of the issue well, students should not only listen to its text, but also read it independently.

If the condition of the problem is confusing, it is appropriate to give students one to three minutes to think about the content of the problem independently. We believe that the

preparation of problem sets, multimedia and graphic tools for the purpose of using the pedagogical technologies used in solving textual problems by developing students' calculation skills in solving problems in primary grade mathematics classes will give positive results in increasing the effectiveness of primary mathematical education.

One of the difficult issues for students is the methodology of working on textual logical problems.

- text analysis, which includes the following: familiarization with its content, creating it in imagination, distinguishing terms and requirements (questions);
- building an auxiliary model;
- organizing the search for a solution by building a search scheme (analytical - from the question to the data, synthetic - from the data to the question or mixed, including the first and second elements);
- planning and preparation of solutions (according to actions with explanations, in the form of numerical expression, plan and solution or writing down the solution with questions); - checking the correctness of the completed solution (determining whether the obtained result is in accordance with the condition information, by creating a problem opposite to the problem given in another way or method, if any);

After drawing up a plan for working on the task, students are invited to implement the plan. This allows you to partially prevent errors that may occur when solving the problem.

We solved the following logical problem given in the mathematics textbook of the primary grade 3 in a demonstrative way as follows.

Matter

A horse eats a pile of hay in 1 month, a goat in 2 months, a sheep in 3 months, and a rabbit in 6 months. How long will all the animals eat this hay together?[5]

If this problem was given in higher classes, it would be solved as follows. It will be resolved like a business issue.

Solving

$$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{6} = \frac{1}{x}$$

We calculate the left side of the equation by the common denominator and get the following equation.

$$\frac{12}{6} = \frac{1}{x}$$

from this equation, $x = \frac{1}{2}$ we will have a solution.

That is, since in our case the amounts are given per month, $\frac{1}{2}$ number means half moon. Since 1 month consists of 30 days, it is convenient to explain the half month as 15 days.

So the answer can be given as 15 days or half a month.

Taking into account that this problem is given in the primary grade mathematics textbook, let's think about how a primary grade student can solve this problem. Demonstrations are more effective in elementary grades.

We solve the problem in the following steps:

1- we will find out which animal eats the fastest. That is, the horse eats faster than everyone else, that is, it finishes the hay in 1 month. It can be seen that if everyone eats hay together, they will finish it in less than 1 month. Therefore, converting months to days is very convenient for calculation.

2- We divide the total amount of hay into equal parts depending on how many days the animal that ate the slowest has eaten. That is, the animal that eats the slowest is a rabbit. He ate hay in 180 days. Therefore, we divide the hay into 180 equal pieces.

3- In order for the calculation to be understandable, we describe the pieces in the drawing. And we express how many parts one animal ate in one day. To find out how many pieces he ate in one day, we divide the total number of pieces by the total number of days each of them ate.

Solving.

We express in days the time each animal spends eating hay.

Horse - 1 month-30 days

Goat - 2 months-60 days

Sheep - 3 months-90 days

Rabbit - 6 months-180 days

Knowing that the animal that eats the slowest is a rabbit, we divide the given amount of hay into 180 pieces, that is, parts. And to make it clear that he started eating at once and how many days he eats, we will make the following drawing. We draw 18 pieces in width and 10 in length, making a total of 180 pieces. And we place animals in different places of the drawing.
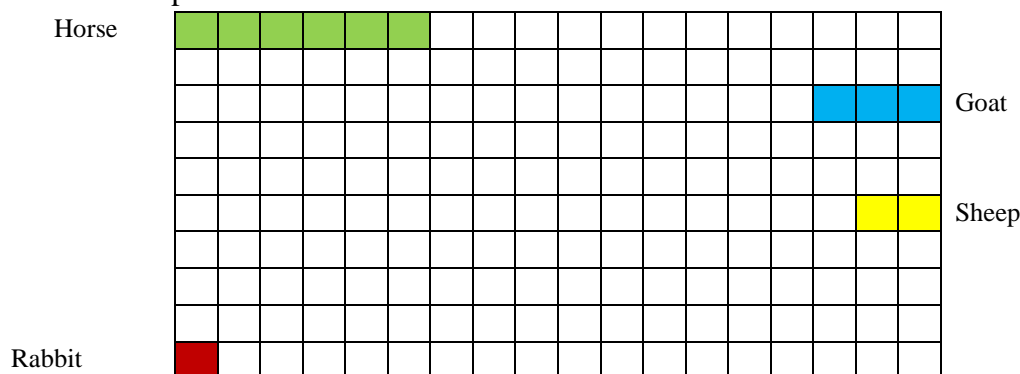
To find out how many pieces he ate in one day, we divide the total number of pieces by the total number of days each of them ate. In one day:

horse 180:30=6 pieces

goat 180:60=3 pieces

put 180:90=2 slices

rabbit 180:180=1 piece

Based on this drawing, such a conclusion is drawn. In 1 day, animals eat 12 pieces of hay. Then, since there are 180 pieces of hay in total, we can find how long it took all the animals to eat the hay by dividing 180 by 12.

$$180:12=15$$

So, according to the problem question, we find that all the animals eat this hay together in 15 days.

Answer. 15 days or half a month.

In order to check mastery of the topic "Methodology of working on textual logical problems in elementary grades", a control work is conducted, in which the student must independently design the work assigned to him.

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