INNOVATIVE TECHNOLOGICA
METHODICAL RESEARCH JOURNAL
ISSN: 2776-0987 Volume 4, Issue 5 May 2023

# DIFFERENT METHODS OF MODELING IN PRIMARY CLASSES

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**Annotation**: The article analyzes the use of models in the process of teaching students in mathematics lessons. The use of models in solving complex problems develops imaginative thinking of students, contributes to the development of abstract thinking, the development of various forms of mental activity, and maintaining interest in the subject.

**Keywords**: modeling, math, cognitive interest, junior schoolchild, modeling in primary classes.

When observing objects in nature and society and their properties, initial concepts are formed about them. These concepts can be expressed in simple conversational language, through various pictures, schemes, symbols, and formulas. A similar representation is called a model, and knowledge of the observed object with the help of models is called modeling.

Let's get acquainted with very simple, simple cases of mathematical modeling. Mathematical model of the problem - transferring the problematic state (situation) described in the problem to the "language of mathematics" means expressing this state through formulas, equations and inequalities. In elementary school, the problem can be modeled in different ways. Solving the problem based on the model helps students to understand the essence of the problem.

Solving problems by modeling is taught in primary classes from the 2nd grade. At first glance, the solution is practically the same, but there are also problems with a completely different appearance. For example, if there are 3 apples, 4 pears and 2 pomegranates, how do you find the total number of apples?

Of course 3+4+2=9. Also, if there are two hours of mathematics, two hours of foreign language and physical education, we will write the equation 2+2+1=5. For both cases, we used a mathematical model, that is, we added apples, pears, pomegranates, and natural numbers without adding math, foreign language, and physical education. 3+4+2 or 2+2+1 expressions are called the mathematical model of the given problem. Mathematical modeling of the problem allows teachers to focus on solving the same type of problems.

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ISSN: 2776-0987 Volume 4, Issue 5 May 2023

In elementary school, the problem can be modeled in different ways. Solving on the basis of the problem model helps students to understand the essence of the problem. Mathematical modeling of the problem allows teachers to focus on solving the same type of problems. As an example, let's consider several different models of the problem.

**Issue 1**

60 kg of potatoes and less than 24 kg of onions were brought in the kitchen. How many onions and potatoes were brought to the kitchen?

Solution: a = 60 ; b = 24;

Problem model a+b;

It is necessary for the teacher to know such models. Because solving the problem through models during the lesson helps the student to easily explain.

We believe that it is appropriate to use the following models in the first class.

1) ☐ + ☐ = ☐

2) ☐ – ☐ = ☐

Even in the second grade, after the topic is taught, they should use the mathematical model in the educational process. Mathematical models of all problems of the second class correspond to the following forms:

$a \cdot b - c$ ; $a - b \cdot c$ ;

$a : b + c$ ; $a - a : c$ $a + b : c$

$(a + b) : c$ ; $a : b + b \cdot c$

For example, let's make a mathematical model of the following problem.

**Issue 2.**

5 apples and 8 apples were placed in 4 vases. How many apples are in the bowls?

Mathematical model: a · b + c

To solve the problem a = 4 ; We need to know that b = 5.

**Issue 3:**

The first ball has 28 m of fabric, and the second ball has more than 14 m of fabric. How many meters of fabric are there in total?

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ISSN: 2776-0987 Volume 4, Issue 5 May 2023

The solution to this problem is solved by the model a+b+a=2a+b.

Now let's take a look at modeling motion issues:

**Issue 4.**

A shop, a cinema and a school are located on one side of the street. The store is 900 m from the cinema, 200 m from the cinema to the school. How far is it from the store to the school?

We will solve the problem by drawing up various drawings and formulas according to the condition.

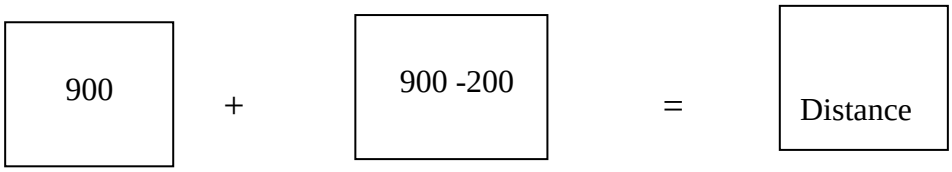
Solution :

1 – model



degrees near cinema school

**2 – model**




1) How many meters from the cinema to the school? 900 – 200 = 700 m

2) How far is it from the store to the school?? 900 + 700 = 1600 m

Answer: 1600 m

**3 – model:** mathematical model of the problem a+b-c

In the modern mathematics program, great importance is attached not only to solving ready-made problems, but also to teaching students how to formulate a problem based on the information collected in solving some problems in life and analyze it and solve it. Therefore, a lot of attention is paid to solving this problem from the beginning of the primary school.

It is known that in the primary class, different modeling of the problem is introduced with a short description of the problem, problems given based on a picture, problems given based on a drawing, etc. Creative work on the mathematical model of the problem is important among them. In general, the mathematical model of the problem can be described as follows.

Mathematical model of the problem is to translate the problem situation described by the problem into mathematical language, to express this situation through

ISSN: 2776-0987 Volume 4, Issue 5 May 2023

formulas, equations and inequalities. Let's get acquainted with the mathematical model of some problems in this regard.

**Issue 5.**

5 notebooks cost 1000 soums. How much do 20 such notebooks cost?

Solution: 1) 1000:5=200 (soum)

2) 20*200=4000 (soums)

Numerical expression is 1000:5*20

**Issue 6.**

The car traveled 350 km in 5 hours at the same speed. How far does he cover in 7 hours at this speed?

Solution: 350:5*7=490 km

**Issue 7.**

6 m of gas will cost 10,860 soums. How much will 13 m of gas cost?

Solution: 10860:6*13=23530 (soum)

The mathematical model of problems 4-6 above is as follows:

in the form of a:b*c. Here, depending on different values of a, b, c, the solution of the above problems will be found. For example, in problem 4, a=1000 b=5 c=20.

The model of problem 1-3 given at the beginning will have the form (a+b):2.

Different values of a and b can be used to create different problems. For example, when a=4 b=6, the following problem arises.

**Issue 8.**

The truck delivered 6 tons of food on the first day, and 4 tons on the second day. And on the third day, if he brought 2 times less products than the products of these two days, how many products did he bring on this day?

It is also possible to create "new" models by changing the form of the above model (a+b):2. For example, if we put it in the form (a+b):2+a, the following problem can be created from problems 1-3 above. a=100 b=150

**Issue 9.**

The entrepreneur picked 100 watermelons from the 1st row and 150 from the 2nd row. If the number of watermelons picked from the first and second rows is equal to half of the watermelons from the third row, how many watermelons did the event pick from the first and third rows together?

**Issue 10.**

100 bushes were planted in the 1st row and 150 bushes in the 2nd row in the school flower garden. In the third row, 2 times less flowers were planted than in

the previous two rows. How many bushes of flowers were planted in the third and first row.

**Issue 11.**

On the first day, 100 t, on the 2nd day, 150 t, and on the third day, half of the steel sheet was brought to the component preparation department of the Asaka machine plant. How many steel sheets were brought in total on the first and third day?

From the above formulas, it can be concluded that students' ability to create a problem based on a mathematical model will expand, and it will help to form the skills of solving it by creating a problem based on the given information.

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