How to teach a child to solve problems?

Each student must learn to solve problems independently. The famous mathematician D. Poya advises: “If you want to learn how to solve problems, then solve them!” But this does not mean that you need to thoughtlessly solve a huge number of problems. It is more useful to complete a few tasks, but at the same time their solution itself should include a study of the structure of the proposed mathematical problems and identification of the used general methods and techniques. While the child is studying in primary school, he must be taught to distinguish a condition and a question in a problem.

The condition is what is known, and the question is what needs to be found. Then, in the condition and the question, you highlight the main words. As a rule, these are actions: it was, they arrived, bought, presented, remained, etc. But the main words can be, for example, two children (Masha and Misha, Petya and Seryozha) or two objects (shops, stalls, houses) etc. At this stage it is important that the child imaginatively presents what the task says. Then you need to show the child the meaning of these words. It was, of all, bought, and, it became, on more these words indicate addition. Sold, left, left, by less these words indicate subtraction. Decomposed, distributed, in less is a division. If the question begins with the words "How much then this is an indication of the action of the subtraction. Some math textbooks use the terms “part” and “whole”. There was, of course, everything these words indicate the "whole", and the rest of the words the "part".

Knowing this, it will be easier for your little student to draw a diagram for the task. Now that a scheme has appeared that contains a condition and a question, think with your child: is it possible to immediately answer the question posed, do we know everything to answer this question, or do we need to know something else? Next, you help the child identify intermediate issues in the task. After all, how many questions a child finds, so many actions in this task. It is important to discuss here with what mathematical action you will look for the answer to this question. So a plan for solving the problem. A special role in solving problems is played by the final analysis of the solved problem, that is, the child must once again tell how he solved the problem and why he chose one or another mathematical action. Have your child solve a similar problem on their own. Discuss with him how the tasks are similar and how they differ.

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How did these differences affect the solution to the problem? Why are tasks solved the same?