

IMPROVING THE METHODS OF PROBLEMS SOLVING RELATED TO SOLUTIONS IN 11TH GRADES.

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Annotation

In this article, improving the methods of problems solving related to solutions in 11 grades has been discussed. And also, different methods of problem solving in chemistry have been learned and analyzed.

Key words: chemistry, problem solving, methods of problem solving, solutions, problems on solution, calculation, dilution, mixing, drying

Nowadays, in-depth study of chemistry, along with lectures, also focuses on practical lessons. If we analyze the example of the school, the 11th grade pupils are still lagging behind in organizing their independent work and work with literature. One of the keys to developing pupils' independent work is to teach them problem-solving. Because lectures give theoretical knowledge, and practical lessons give practical knowledge and skills. However, there is a lack of problem-solving lessons that link theory with practice and reinforce theoretical knowledge with practical knowledge. Therefore, there is a need to organize problem-solving classes in schools and lyceums.

For this reason, problem-solving lessons in chemistry for 11th graders should be included in the extra class schedule for 11th graders. Problem-solving is taught outside of class, depending on the teacher's time. If schools and lyceums focused on problem-solving, great strides would be made in establishing independent work. Because in the process of solving problems, the student expands the level of thinking, developing the ability to repeat, process and apply in practice the knowledge acquired in lectures. It also shapes the ability to work independently.

Without knowing how to solve problems in chemistry, it is difficult to master the theoretical part in depth and content. In addition, the problems of the Olympics and the entrance exams to higher education are more complex than chemistry, and there are very few books and manuals that teach them to solve them in different ways.

Therefore, research into the different ways of solving problems in chemistry is one of the most pressing issues, and it is important to implement the teaching of different ways of solving problems. Complex problems in chemistry are often related to solutions, because in practice it is necessary to make calculations to determine the quantitative ratio in solution.

The transition from one method to another is relatively easy in expressing the concentration of a substance in solution, in which case the equality of the two algebraic expressions is written, and each of them represents the mass of the substance dissolved in one solution. One of these expressions represents a quantity that describes a known concentration, and the other is an indefinite one, representing a method chosen according to the conditions of the problem. The most common problems are considered to be a specific mixture that is balanced on the solution: dilution, mixing, drying, as well as reactions in solution.

A solution is a homogeneous system consisting of two or more components. The amount of solute in a solution determines its concentration. The concentration of solutions is expressed in several ways.

a-mass of solute, b-mass of solvent

1. Problem. 50g of substance is dissolved in 1.5 liters of water. Find the percentage concentration of the solution?

Method 1. Solution: a. The total mass of the solution. $1500 + 50 = 1550$

b. concentration of solution.

$1550 \frac{50}{1550} \times 100 = 3.2\%$

$100 \frac{50}{1550} \times 100 = 3.2\%$

Method 2: $C\% = \frac{50}{1550} \times 100 = 3.2\%$

2. Problem. Dissolve 200 volumes of HCl in 1 liter of water (e.g.). Find the concentration of C% of HCl in the resulting solution? $l = 1000g$

Solution. Dissolve 200 volumes of HCl in 1 liter of water. $HCl = 36.5g$

Method 1: $36.5 \frac{200}{1000} \times 100 = 73\%$

$X \frac{200}{1000} \times 100 = 73\%$

$1325.9 \frac{325.9}{1325.9} \times 100 = 24.58\%$

$100 \frac{325.9}{1325.9} \times 100 = 24.58\%$

Method 2: C% liter: $C\% = 24.58\%$

3. Problem. C_m -molar concentration m-mass of solute

M is the molecular mass of the solute V-solution volume

Molar concentration is the molar number of a substance dissolved in 1 liter of solution.

Problem 1. Determine the molarity of a solution if 85.5 g of $Al_2(SO_4)_3$ salt is dissolved in 500 ml of solution?

Method 1 Proportion $l = 1000 \text{ ml } Al_2(SO_4)_3 = 342$

$500 \frac{85.5}{342} \times 100 = 124.58\%$

$1000 \frac{85.5}{342} \times 100 = 249.16\%$

Method 2: $C_m = \frac{85.5}{342} = 0.25M$

Improving the quality of education, forming pupils' interest in science, strengthens the theoretical knowledge of students and forms the most important competencies that they will need throughout their lives. In conclusion, the main goal of the teacher should be to educate pupils to be mature, knowledgeable and creative in all respects. It is necessary to have a broad outlook, a scientific outlook, to keep pace with the times.

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