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METHODOLOGY OF TEACHING THE SUBJECT "BASIC RULES OF COMBINATORICS" USING MS POWERPOINT SOFTWARE

Annotation. In this article, the methods of teaching the topic of basic rules of combinatorics using MS PowerPoint program are considered. In addition, it is possible to use substitution, grouping and several other methods in combinatorial problems and prepare a presentation in the program.

Key words: combinatorics, MS PowerPoint program, combinatorial problems, substitution, grouping, slide, presentation, information technologies.

Combinatorics is a set of elements of mathematics under certain conditions is a section on selection and placement.

Human life is connected with technology and production. We usually have to do it We look at whether the work we do is useful or not. So, the work being done

It is important to know in advance whether it will be beneficial or harmful, so it is important to do it methods should be searched and analyzed.

Combinatorics is the condition of a finite number of given objects is to count the combinations.

In combinatorics, operations are always performed on the elements of a set. Below is one an example is given. It contains a set of 3 vegetables. Collection items {turnip, carrot, eggplant} respectively {a1, a2, a3} can be defined as.

Problems of this type are placement in combinatorics (placement or is called the issue of deception. In this, as you can see, all elements participate and by changing their places, ways to solve the problem are determined. Such sorting (placement) is called displacement.

The number of permutations made up of n elements is $P_n = n!$ will be equal to and is read as "en factorial".

$$n! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot \dots \cdot n$$

0! is defined and the value is $0! = 1$, 0 becomes 0 again when the elements are swapped. di. That's because permutations of 0 elements make 0 again

$$0! = 1 \text{ will be.}$$

$$0! = 1 \quad 1! = 1$$

$$2! = 1 \cdot 2 = 2$$

$$3! = 1 \cdot 2 \cdot 3 = 6$$

$$4! = 1 \cdot 2 \cdot 3 \cdot 4 = 24$$

$$5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$$

$$6! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 = 720$$

$$7! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 = 5040$$

$$8! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8 = 40320$$

$$9! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8 \cdot 9 = 362880$$

$$10! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8 \cdot 9 \cdot 10 = 3628800$$

The main property of the factorial:

$$(n + 1)! = (n + 1) \cdot n!$$

For example:

$$(5 + 1)! = (5 + 1) \cdot 5!$$

Indeed:

$$6! = (1 \cdot 2 \cdot 3 \cdot 4 \cdot 5) \cdot 6 = 720$$

If we calculate the value:

$$(1 \cdot 2 \cdot 3 \cdot 4 \cdot 5) = 5! = 120$$

In how many different ways can 5 students be placed on 5 chairs?

$$P_5 = 5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120.$$

In how many different ways can 6 letters be placed in 6 envelopes?

$$P_6 = 6! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 = 720.$$

In how many different ways can 4 books be distributed to 4 children?

$$P_4 = 4! = 1 \cdot 2 \cdot 3 \cdot 4 = 24.$$

Apples of 4 different colors are given. Take 2 of these apples how many different groups can be formed?

In this case, we have the following cases we can determine.

So, the number of groupings we are looking for is 6.

If the element A is first in n ways and then the element B is in m ways can be chosen, then the pair A and B can be chosen in $n \cdot m$ ways.

The use of MS PowerPoint presentation materials allows you to visually present the material being studied in the form of static text or graphic information and animation. This form of training is relatively easy to technically support (you need a projector and a computer with installed Microsoft PowerPoint, which is part of the standard Microsoft Office package). At the same time, behind the external ease of presentations costs careful preparation of the speech, planning of demonstrations materials, collection and synthesis of necessary information, clear knowledge of time frames and the correct choice of necessary technical means.

Most authors agree on what it should look like good presentation. The main tasks of the developer include the correct selection of colors, competent use of animation and illustrative material and clear structuring of the material.

For presentation text, it is recommended to use fonts and their sizes that ensure good readability and perception.

Images. Fonts typically used are Times New Roman and Arial. When repeating the same text on multiple slides, it is recommended to maintain the font style and size. For the name you should use the size font size of at least 28 pt., for regular text - at least 24 pt.

Maximum the total amount of text on slides is 10–15 lines. Font size may require adjustment as you move from room to room, as the brand of projector and location have a significant impact on the size of the projection.

Animation allows for interactive appearance capabilities individual slide elements in parts. Better for lecture presentation use one type of animation effect, for example emergence. Using different types of animation on the same slide (if it is not dictated by special tasks) distracts the audience and makes the presentation lightweight.

Creating hyperlinks allows you to more effectively navigate through presentation slides, as well as bring objects that are not included into the presentation. Into the presentation directly (text documents, tables, video materials, graphic materials, websites). A hyperlink can be issued to a text inscription, to a picture, or to a special control button. It must be borne in mind that all external sources of information, communication with which it is registered via hyperlinks, it is necessary to permanently store in the place where the hyperlink points and transfer it to another computer along with the presentation.

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