НАУЧНО-МЕТОДИЧЕСКИЙ ЖУРНАЛ «НАУКА, ТЕХНИКА И ОБРАЗОВАНИЕ» № 8(72) 2020 ISSN 2312-8267

РОСКОМНАДЗОР
СВИДЕТЕЛЬСТВО ПИ № ФС 77-50836
ISSN (pr) 2312-8267 ISSN (el) 2413-5801

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НАУКА, ТЕХНИКА И ОБРАЗОВАНИЕ

SCIENCE, TECHNOLOGY AND EDUCATION

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СЕНТЯБРЬ
2020
№ 8 (72)

НАУЧНАЯ ЭЛЕКТРОННАЯ БИБЛИОТЕКА
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ISSN 2312-8267 (печатная версия)
ISSN 2413-5801 (электронная версия)

Наука, техника и образование

2020. № 8 (72)

Москва
2020

Содержание

IMPLEMENTING “VENN DIAGRAM METHOD” IN MATHEMATICS LESSONS

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Abstract: *this article is devoted to the study of one of the famous method used in the study of set theory. The article outlines the primary approaches detecting similar various properties of objects, their arrangement along schematic circles, the so-called Venn diagrams. The method presented in this article is applied in those groups where students are not yet familiar with the rules of set theory, therefore, preparing them for the study of broader and more complex branches of mathematics. The areas of application and useful results are stated.*

Keywords: *diagram, properties of objects, trapezoid, parallelogram.*

МЕТОД «ДИАГРАММЫ ВЕННА» НА УРОКАХ МАТЕМАТИКИ

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Аннотация: *настоящая статья посвящена изучению одного из знаменитых методов, применяемого при изучении теории множеств. В статье излагаются первичные подходы обнаружения подобных и различных свойств объектов, их расположение по схематичным окружностям, так называемыми диаграммами Венна. Метод, излагаемый в данной статье, применяется в тех группах, где ученики ещё не ознакомлены с законами теории множеств, тем самым они подготавливаются к изучению более широких и сложных разделов математики. Изложены сферы областей применения и полезные результаты.*

Ключевые слова: *диаграмма, свойства объектов, трапеция, параллелограмм.*

UDC 37.02

The use of innovative technologies in the implementation of the requirements of the Law on Education and the National Program of Personnel Training plays an important role in improving the methodological quality of teaching technology, improving the efficiency of learning and the introduction of new methodological elements [1-14].

The use of a number of teaching technologies, which are now one of the most modern technologies, is also of great importance.

Proper organization of the learning process in the teaching of mathematics depends on the readiness of each student, his level of knowledge. A student's individual differences are evident in his or her mental ability, special training, reading ability, mastery, interest, and other similar indicators. Students learn at different levels over time, as it takes time for students to master the material.

The Venn diagram method is used to compare two or more concepts and objects and to plot the result. It is named after the English scientist John Venn (1834-1923), who studied the theory of logic.

It usually consists of two circles, each of which defines a set of properties of an object. When two objects have similar properties, the circles that describe these objects intersect. If they do not have the same properties, these circles do not intersect. In the area of intersection that is common for the two circles, they have the same properties, and in the other areas, the objects have different properties.

When comparing more than two objects, more than two circles are used, respectively. The purpose of using the method of "Venn diagram" is to develop students' ability to compare two or more objects and concepts, to identify their differences and common characteristics.

Stages for implementation of the method:

Step 1. Students are divided into two groups and each group is given one object (concept or object).

Step 2. Two intersecting circles are drawn on the board and divided into groups.

Step 3. The groups take turns writing the properties of their objects in their circles.

Step 4. Once the properties have been written, it is determined whether the two objects have common features. Entries about common sides in circles are deleted and they are written as one in the common field.

Step 5. Students analyze a Venn diagram formed by comparing two objects. The common characteristics and differences of these objects are once again highlighted.

For example:

After com leting the “Polygon ” ection in Grade 8, yo can e the Venn diagram to com are the properties of different polygons.

Activating exercise. The first object: a set of all trapezoids; the second object: a set of all parallelograms. Using a Venn diagram, determine the general and different properties of these polygons.

The method is carried out in the above order: Students are first divided into two groups, and the first group is given the concept of "trapezoid", the second group - "parallelogram". Two intersecting circles are drawn on the board and divided into groups. The groups take turns writing the properties of their objects in their circles. Once the properties have been written, it is determined whether the two objects have common features. Entries about common properties in circles are deleted and they are written as one in the common field. Students analyze a Venn diagram formed by comparing two objects. The similarities and differences of these objects are once again highlighted. As a result, we can create a schematic diagram in the following form.

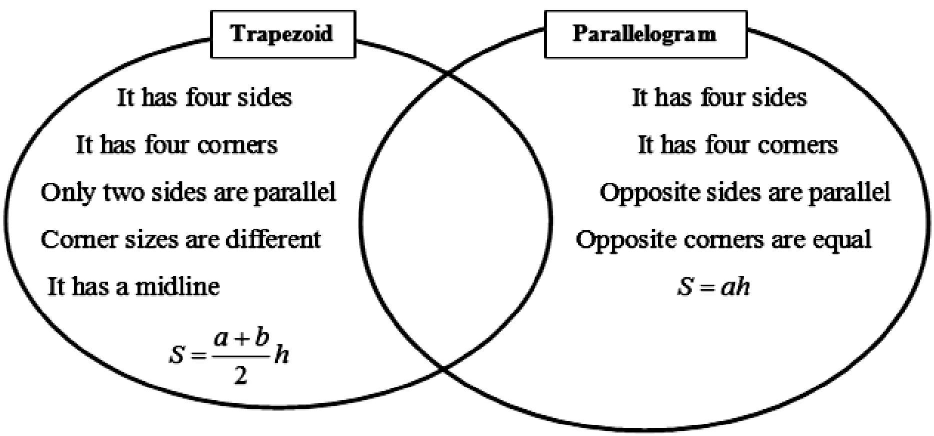

Fig. 1. Schematic diagram for trapezoid and parallelogramm

After completing this diagram, the similarities of these polygons are identified and corrections are made to the diagram.

As an example, three objects: letters in the Latin, Greek, and Cyrillic alphabets are compared using a Venn diagram.

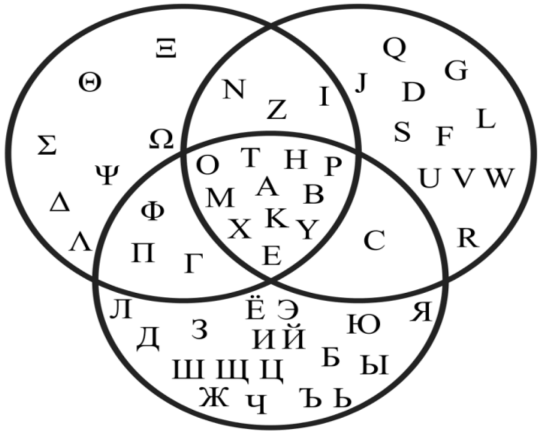

Fig. 2. Venn diagram for Latin, Greek and Cyrillic letters

Scope of application: It is used in the teaching of natural and exact sciences, both individual and in groups, to adapt the questions to a particular subject and groups of students of any age.

Advantages: Develops critical thinking skills, helps to identify both differences and similarities between objects, events, etc.

Difficulties: Not identified.

In the papers [15-24] introduced the set so-called the d-dimensional torus T^d (the first Brillouin zone, i.e., dual group of Z^d), the cube $(-\pi,\pi]^d$ with appropriately identified sides equipped with its Haar measure. The torus T^d will always be considered as an abelian group with respect to the addition and multiplication by real numbers regarded as operations on the three-dimensional space R^d modulo $(2\pi Z)^d$.

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