ADVANTAGES OF SCHOOL EDUCATION OF MATH USING DUAL PROBLEMS

Kholjigitov Dilmurod Kholmurod ugli
Jizzakh State Pedagogical Institute
Department of Mathematics teaching methods Jizzakh, Uzbekistan
xoljigitovdilmurod7@gmail.com

ABSTRACT:

This article explores the concept of dualism, the concept of duality in geometry and algebra. The advantages of using dual tasks in teaching mathematics in school mathematics on specific tasks are highlighted and demonstrated.

Keywords— methods and forms of cognition, induction, deduction, analogy..

INTRODUCTION:

The idea of dualism has long been studied in philosophy. For example, in the views of the Greek mathematician and philosopher Pythagoras, dualism can be seen as a contradiction between even and odd numbers. Dualism is a concept that means that two elements are combined for the same purpose [1]. In general, the elements under consideration can be opposite or complementary to form a unit. In the views of the Greek philosopher Plato, dualism was formed through perceptions and forms. In doing so, dualism gives the first simple features, while the second strives for perfection. The basis of dualistic research is applied to social phenomena. This allows them to be approached through interpretation and description, which is influenced by a specific casuist. Casuistry is the process of thinking about solving ethical problems by extracting or expanding theoretical rules from a particular situation and re-applying these rules to new instances [2]

There is also the concept of the principle of duality in geometry [3]. The principle of duality, the principle of mutual proportionality, is one of the basic theorems of projective geometry. Allows one to derive another theorem directly from a theorem that can be proved. The principle of duality is based on the existence of dual concepts in theory. For the principle of duality to be valid in theory, each axiom must have a dual sentence, either an axiom or a theorem. Therefore, if a sentence can be proved, then a dual sentence is also correct. For example, in projective geometry of a plane, "point" and "straight line" are mutually dual concepts, and the following axioms and theorems are dual sentences: A straight line passes through two points of arbitrary variety. (Pascal's theorem). In any hexagon drawn on any line of the second order, three points where three pairs of opposite sides intersect lie on a straight line. Any line of the second order intersects at a point three straight lines connecting three pairs of opposite ends of an externally drawn hexagon. In spatial projective geometry, the concepts of "point" and "plane", in mathematical logic, the quantifiers of existence and generality of ambiguity and logical multiplication are ambiguous. The principle of duality is present in collections, category theories, and topologies. The principle of duality was first expressed by the French scientist J. Poncelet (1788-1867) for projective geometry.

The principle of duality is also used in linear algebra. In this case, the two-sided problem of linear programming is considered.

$$a_{i1}x_1 + a_{i2}x_2 + \ldots + a_{in}x_n \geq b_i \quad (i = \overline{1, m}) \quad x_k \geq 0 \quad (k = \overline{1, n}) \qquad (1)$$

constraint inequalities and

$$f = c_1x_1 + c_2x_2 + \ldots + c_nx_n \qquad (2)$$

Given a linear shape. Suppose that (1) for the optimal solution of the system it is necessary to minimize the form (2). We call the problem (1) - (2) the first problem.

Given one more programming issue, it is

$$a_{1j}y_j + a_{2j}y_2 + \ldots + a_{mj}y_m \le c_j \quad (j = \overline{1,m}) \quad y_s \ge 0 \quad (s = \overline{1,m}) \quad (3)$$

limitation inequalities and

$$\phi = b_1y_1 + b_2y_2 + \ldots + b_my_m \qquad (4)$$

Be represented by a linear form tool. Here (3) is required to maximize (4) for the optimal solution of the system. We call the problem (3) - (4) a two-sided problem relative to the original.

The matrices of the primary and secondary problems are transposed relative to each other

$$A = \begin{pmatrix} a_{11} & a_{12}\ldots & a_{1n} \\ a_{21} & a_{22}\ldots & a_{2n} \\ \ldots & \ldots & .. \\ a_{m1} & a_{m2}\ldots & a_{mn} \end{pmatrix} \text{va } A_1 = \begin{pmatrix} a_{11} & a_{21}\ldots & a_{m1} \\ a_{12} & a_{22}\ldots & a_{m2} \\ \ldots & \ldots & \ldots \\ a_{1n} & a_{2n}\ldots & a_{mn} \end{pmatrix}$$

The free limits of the system (1) consist of the coefficients of the form (2) and, conversely, the coefficients of the form (2) consist of the free limits of the system (1).

(1) all the inequalities of the system have meaning $\ge$, and (3) the system has the opposite meaning $\le$.

Issue 1. ABCD is an equilateral trapezoid with bases AB = 4 cm and CD = 16 cm. Find the radius of the circle drawn inside this trapezoid.

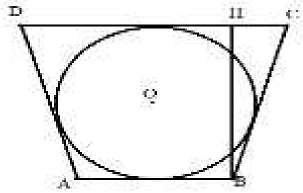
Solution: To draw an inner circle on an arbitrary rectangle, the sum of its opposite sides must be equal. It follows that AB + CD = AD + BC. Since our trapezoid is equilateral, AD = BC, which means that 4 + 16 = 2BC, BC = 10 cm (Figure 1).

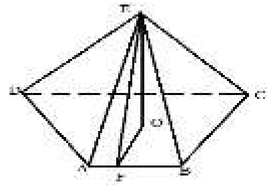
$HC = \frac{CD-AB}{2} = \frac{16-4}{2} = 6$, from the right-angled triangle ΔBHC

$$BC^2 = BH^2 + HC^2 \quad BH = \sqrt{10^{2\cdot} - 6^2} = 8 \quad BH = 2r \quad r = 4sm$$

Now let's look at the dual issue of the 1st issue given in space.

Issue 2. The base of the pyramid is an equilateral trapezoid. In this case, and the sides are 4 and 16 cm, respectively. If all the sides of the pyramid are at the same angle to the base plane, find the size of the pyramid (Figure 2).





1) Fiure 1 Figure 2

2-Issue 1 is used in solving the problem. In order to study the complex concept of Bunda, we use the concepts of the issue that are dual to it and determine the solution of the issue. In school mathematics, such issues constitute the majority, they are threeraydi in all departments of elementary mathematics. It will serve the students to properly understand the given issue and to properly implement the method of solution if some of the issues that are difficult to be addressed are used dual issues that serve as the basis for it.

REFERENCES:

1) British Encyclopedia. (2019) .Dualism | philosophy. [online] available: britannica.com February 21, 2019
2) D Encyclopedia site: uz.wikisko.ru.
3) N.Dadajonov, R.Yunusmetov, T.Abdullayev. „Geometriya" 2-qism Toshkent „O'qituvchi" 1988-b.87-89..
4) R.N.Nazarov,B.T.Toshpo'latov, A.D.Do'smetov. „Algebra va sonlar nazariyasi". 1-qism Toshkent „O'qituvchi" 1993-b.294-296.
5) Rakhmonkulov Feruz Pardaboyevich, Usarov Sardor Abdunazirovich, Shabutayev Quvondiq Saydullayevich, Teaching computer science at school - current challenges and prospects , JournalNX - A Multidisciplinary Peer Reviewed Journal: Vol. 6 No. 11 (2020): journalnx
6) Rakhmonkulov Feruz Pardaboyevich, Khonimkulov Ulugbek Suyunbayevich, creation of student portfolio in the process of teaching computer graphics in higher education institutions , JournalNX - A Multidisciplinary Peer Reviewed Journal: Vol. 6 No. 11 (2020): journalnx