



METHODS OF USING POWER POINT PROGRAMS TO MAKE THE INTERSECTION LINE OF TWO POLYGONS LOCATED IN A SPECIAL SITUATION

J. Kholiqov,

Lecturer at Samarkand State University named after Sharof Rashidov

Sh. Egamova,

Teacher of Fine Arts and Drafting at Samarkand City School No. 1 with
Specialized Classes in Certain Subjects (General Secondary Education School)

Abstract

The article provides information about the application of information technology and its effectiveness in the field of drawing geometry and engineering drawing. According to the results of the analysis, the practice of using the Power Point program during the teaching of drawing geometry showed the feasibility of using graphic programs as a part of primary graphic education in technical higher education institutions.

Keywords: Power Point, technology, multiplicity, Presenter, Apple Macintosh, projection, Ananev grid.

Introduction

The modern era in the global educational information space. This process is accompanied by significant changes in pedagogic theory and educational process related to making adjustments to the content of educational technologies, which should be compatible with modern technical capabilities and contribute to the student's full access to the information society. will come. Computer technology should not be an additional "add-on" to teaching, but an integral part of the overall educational process that significantly increases its effectiveness; the development



Modern American Journal of Engineering, Technology, and Innovation

ISSN(E): 3067-7939

Volume 01, **Issue** 06, **September**, 2025

Website: usajournals.org

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of society is characterized by the strong influence of computer technologies, which penetrate into all spheres of human activity and ensure the spread of information flows in society.

Currently, it is difficult to imagine existence outside the sphere of information and information technology. The increasing number of different types of information forces us to introduce new, advanced methods and tools for its processing, and modern life conditions increase more and more requirements for its storage, transmission and security. Education is an integral part of human life, and at the same time it is a source of new knowledge in this area and the field of application of this knowledge.

Today, it is important to expand the scope of using Power Point software in drawing geometry classes. Spatial imagination is formed in students by seeing the solutions of various issues related to the topic in pictorial and animated form.

In the process of conducting research on the article, we considered ways to solve the simplest problems on the topic of "Polygons" using the Power Point program. The idea to create Power Point comes from Berkeley University student Bob Gaskins. 1984 Gaskins joins the Forethought firm and hires a programmer named Dennis Austin. Bob and Dennis combine their efforts and create Presenter. Dennis creates the original version of the program with Tom Rudkin. Later, Bob decides to change the name of the program to Power Point. 1987 Power Point 1.0 is introduced for the Apple Macintosh system. He worked in black and white format. Later, color versions of the Macintosh appeared, and a color version of the program was created as well.

In particular, solutions to several problems were studied based on the Power Point program, which is widely used in today's modern education process.

In the process of solving the problems given by the students, they pay very little attention to the spatial solution of the task. As a result, the student solves the problem based on the knowledge and practical help given by the teacher without deep understanding. In our scientific research work, unlike other studies, when solving the problem, first of all, we focused deeply on its spatial solution. First of all, we studied the ways of finding the spatial solution of the issues given on the topic and applying it to orthogonal projections through Power Point. We have solved this problem in the following problem example.



Example 1: Draw a line intersecting two polygons in a special situation and mark their visible and invisible parts (using the Ananev grid).

Creating presentations in the Power Point program related to the solution of the problem, preparation of various animations is carried out in the following order.

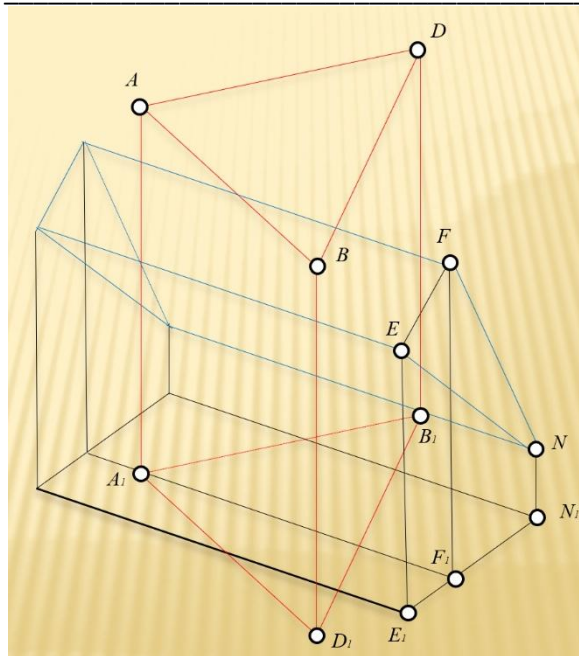
1. First, let's start by performing the spatial solution of the problem in an animated form. We have to study the various commands of the program and their functions in-depth while doing this work, and only after that we should proceed to solving the problem. First, we can create a spatial view of two prisms using the commands in the "Drawing" section of the program (Fig.1.) (When solving the problem, it is also necessary to make a horizontal projection of the prism parallel to the horizontal plane).

2. At the next stage, we pass the horizontal projecting plane N through the edge E (E_1) of the prism, which is parallel to the horizontal plane. The N_H trace of this plane intersects the $AD(A_1D_1)$ side of the prism whose edges are perpendicular to the H plane at point $1(1_1)$ and the $BD(B_1D_1)$ side at $2(2_1)$ points. (Fig. 2)

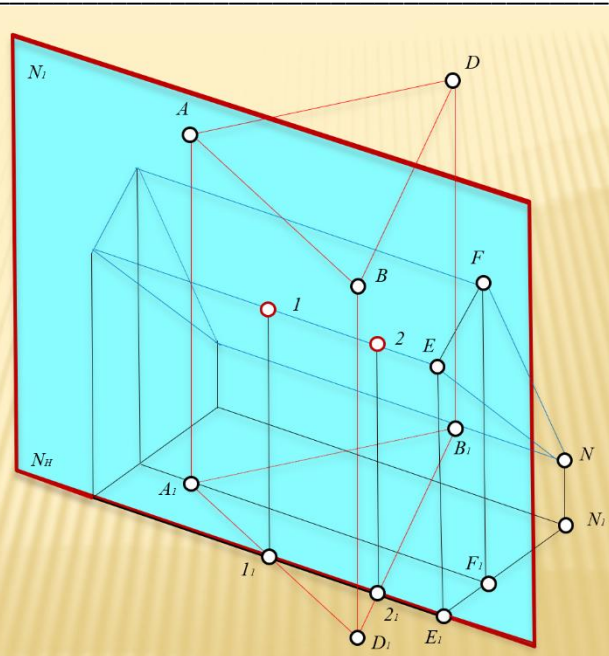
3. Passing horizontal projection planes through the F (F_1) and N (N_1) edges of the prism, we mark points $3(3_1)$, $4(4_1)$. Also, the horizontal projection plane passing through the edge F intersects the EN side of the horizontally located prism at the point L . We will connect the determined points in a sequence and separate them into line types. (Fig. 3-4)

Now we will consider the methods of applying the steps of solving the above example to the orthogonal projection.

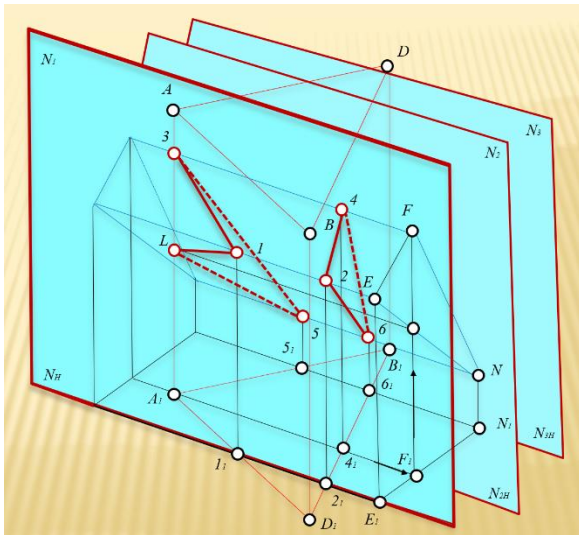
Stage 1. In our example, it is shown to determine the line of intersection of a right prism with the bases lying on H and a three-sided prism with edges parallel to H .



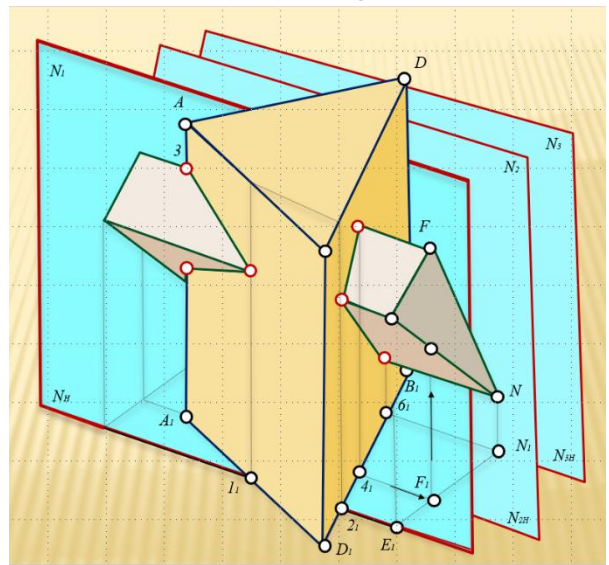
1-Fig.



2- Fig



3- Fig.



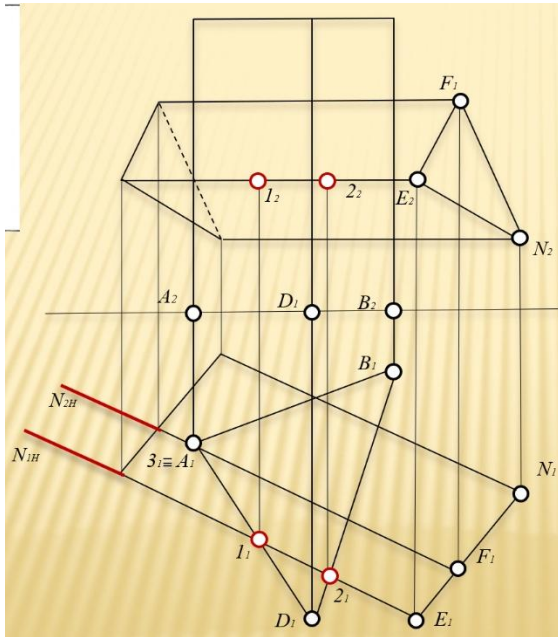
4- Fig

For this purpose, the entry and exit (intersection) points of the edges of the two prisms, which are involved in the mutual intersection, are determined and they are connected accordingly.

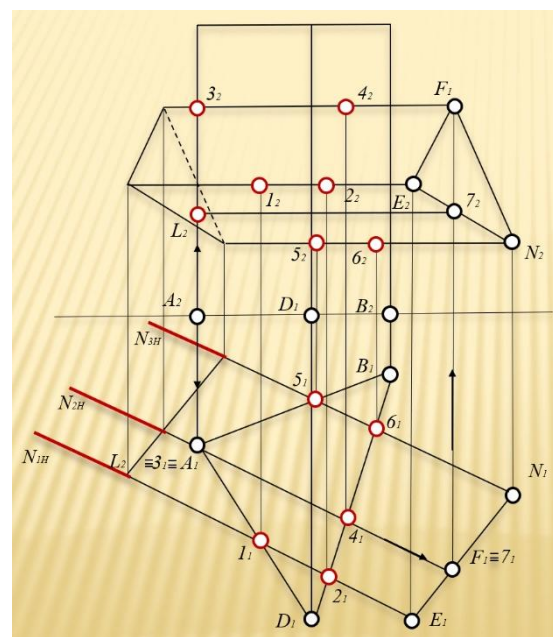
A plane should be drawn through the edges of the given polygons in such a way that it should cut through the prisms through the lines parallel to the edges. First, we pass such a set of planes through a prism located horizontally. For this purpose,

the N_{1H} trace of the N horizontal projecting plane is passed from the E_1 horizontal projection of the EFN-edged prism. A_1D_1 side of a right prism intersects at 11 points and B_1D_1 side at 2₁ points with the horizontal trace of the N plane. The resulting points are brought up to the frontal projection E_2 of the edge E and points 1₂ and 2₂ are determined (Fig 5).

Stage 2. Points 3(3₁,3₂) and 4(4₁,4₂) on the F and N edges of the horizontal prism are also determined using the cutting plane. For this purpose, the N_{2H} and N_{3H} horizontal traces of the N_2 and N_3 horizontal projecting planes are drawn from the F_1 and N_1 horizontal projections of the prism located in the horizontal position, and points 3₁,4₁,5₁,6₁ are determined. Points 3₂,4₂,5₂,6₂ are found by projecting the found points upwards accordingly (Fig. 6) .



(5-Fig)



(6-Fig)

Stage 3. Since the edge A of the right prism intersects with the edge F of the prism located in a horizontal position, the horizontal trace of the plane passed through the edge F crosses the direction EN (E_1N_1, E_2N_2) at the point 7(7₁,7₂). We return the resulting 7₂ points to the frontal projection of the vertical prism edge A parallel to the OX axis and determine $L(L_2, L_1)$ (Fig. 6.).

Stage 4. At this stage, the points defining the intersecting lines of two polygons should be interconnected using the Ananev grid and their visible and invisible parts should be determined. For this purpose, an arbitrary (approximate) frontal

spread of two prisms is drawn in the blank space of the drawing paper. As a result, a grid (cells) is formed.

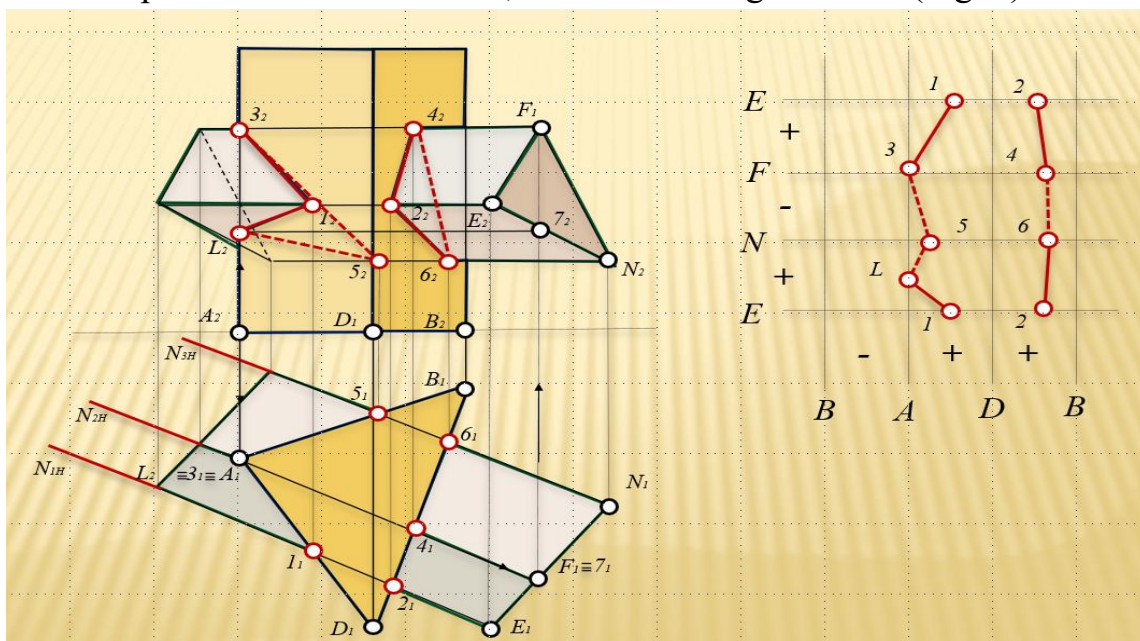
In the frontal projection of a right prism, since its sides AD and BD are visible, A and D, and B and D have a positive "+" sign, and A and B have a negative sign since AB is not visible is placed. In the frontal projection of a prism located in a horizontal position

A positive "+" is applied to the EF and EN intervals, and a negative "-" is applied to the F and N intervals, since FN is not visible.

The entry and exit points on the intersecting edges of each polygon are labeled 1, 2, 3, 4, 5, 6, L, respectively. When connecting these points, it is necessary to follow the requirements noted in Anan'ev's grid.

- the cross-section connecting two points should not cross the polygon edges;
- the cross section connecting two points is drawn on the main connecting line if it corresponds to the interval marked "+" of both polygons.
- if the cross section connecting two points corresponds to the intervals marked "+" and "-" or "-" and "-" of both polynomials, it is drawn on a dashed line.

Stage 5. In the last step, the visible and invisible edges of the polygon edges are drawn according to the line types. The border line of the drawing, the place of the main inscription is drawn and filled, and the drawing is drawn (Fig. 7).



(7-Fig.)



One of the most important aspects of using Power Point software in drawing geometry classes is the ability to show the steps of solving a problem in this program. In the case of using different animations, you can prepare different visual materials for solving the problem.

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