

TECHNICAL CREATIVITY GEOMETRIC-GRAPHIC DESIGN IN STUDENTS DEVELOPMENT BASED ON EXERCISE

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Annotation. In the scientific article named as "Development of engineering and creative abilities of students in drawing classes on exercises of geometric and graphic design", details of pedagogical experiments conducted by the authors and aimed at achieving the results mentioned in the title of the article are presented.

Keywords: drawing, geometric and graphic design, creative ability, educational tasks, creative tasks, drawing, technical drawing.

The history of the social development of society confirms this fact that those who attend drawing classes are more likely to be given new solutions to the issues of science, art or technology. Because the solution of a new issue in scientific, aesthetic or technical shamoyil always requires a lot of work on options, and before the constructor arises another issue – the question of how to distinguish the most optimal of those variants of solutions from ora.

The skills and skills inherent in such an occupation, which is considered as technical creativity, have a special important perspective in the formation and development of the personnel who will become mature specialists of their field in the future as from the moment of their study. Most of the skills and skills inherent in the fao of technical creativity are usually given in the subject of "drawing", which is taught in 8-9 classes of secondary schools of general education.

Below we have found it necessary to describe in detail some of the experiments carried out by ourselves in this direction.

Tasks specific to drawing are called Graphic assignments. Conditionally they are studied as two types of teaching-graphic assignments and known as creative-graphic top-associates.

Educational-graphic assignments can have one and only one correct solution, and they usually serve as a tool for learning the basics of science. Creative-graphic tasks will have a number of Correct Solutions, in contrast to educational-graphic tasks, and will require the reader to give as many solutions as possible. IZLASH process of solving such taskstiradi formulate and develop technical creativity skills and skills in studentstiradi.

The first examples of creative-graphic tasks can be said to take place in the middle decades of the last century from the educational literature on the subject of drawing[5], [6], [7]. This category of tasks is divided into several types. Let's get acquainted with some of these as an example.

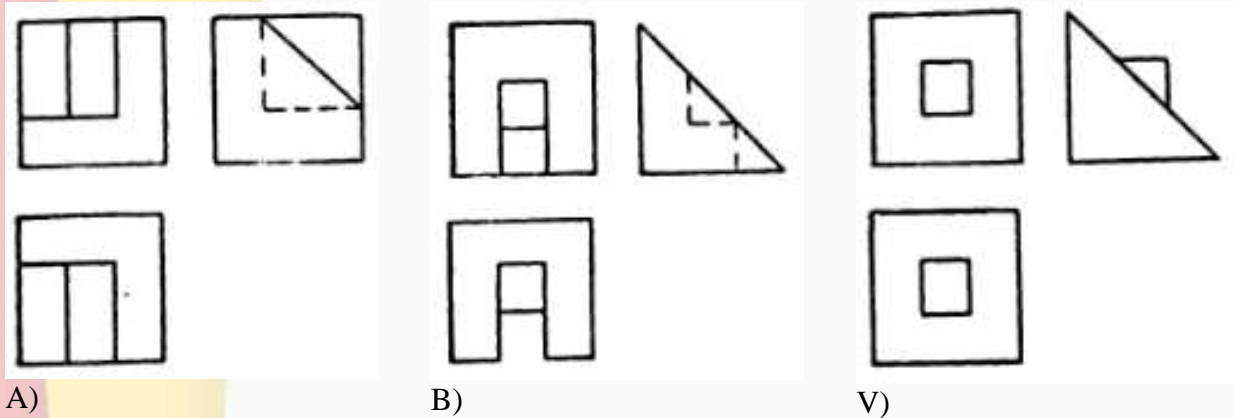
Assignment. Based on the given horizontal and frontal projections, a profile is built (1-image, profile; 3-image model A, profile A). But it is not the only solution. Profile projection can also have different shapes. Identify those forms.

Solution. Figure 2, A presents three-from-one solutions that satisfy the task condition. 3-in the pictures a, b, v and g, which form the Group A of the picture, the solutions are given in the form of technical drawings.

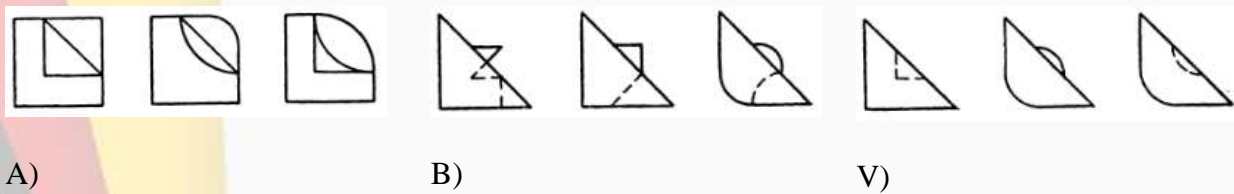
The process previously considered in the drawings of pictures 1, 2 and 3, marked with B and marked with V of the same pictures, is considered on the example of two more models with a different appearance.

Assignment. Based on the given horizontal and frontal projections, the profile projection of the model was found (Figure 4, a). But it is not the only solution. Profile projection can also have different shapes. Identify those forms.

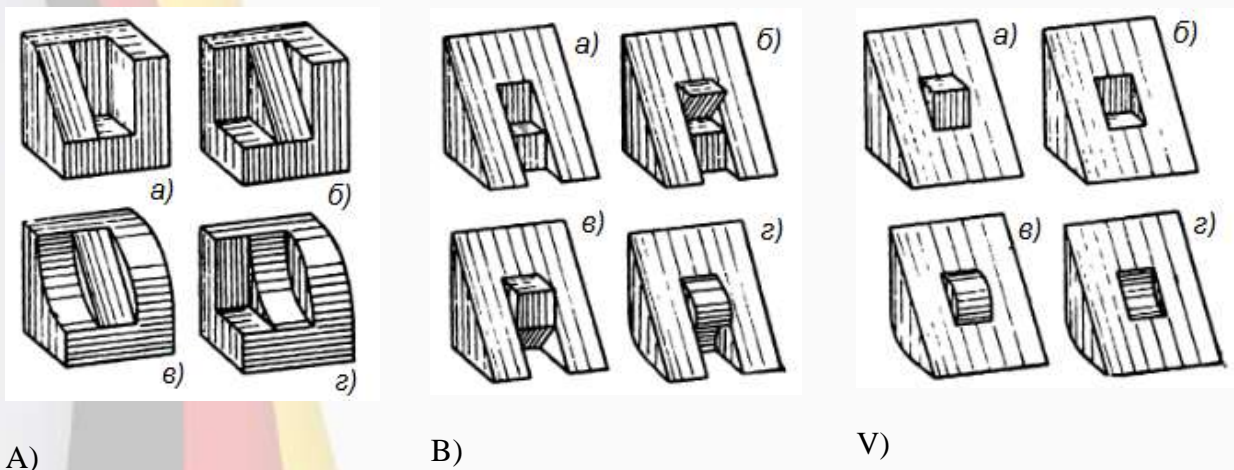
Solution. In Figure 5, the solutions that satisfy the condition of the assignment are being plug-in. The difference of this assignment from previous assignments is in the fact that the number of solutions to be installed in it is quite large.



1- figure.



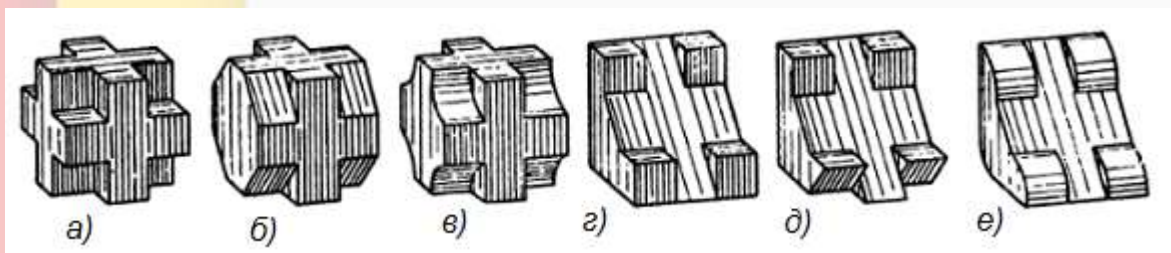
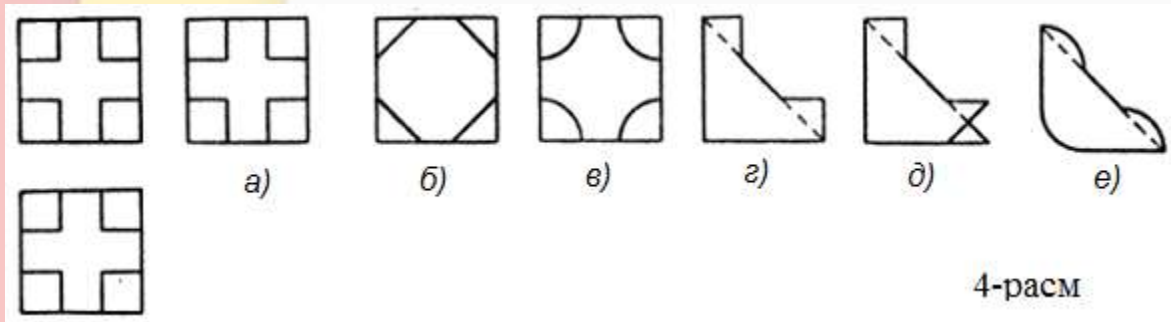
2- figure.



3-figure.

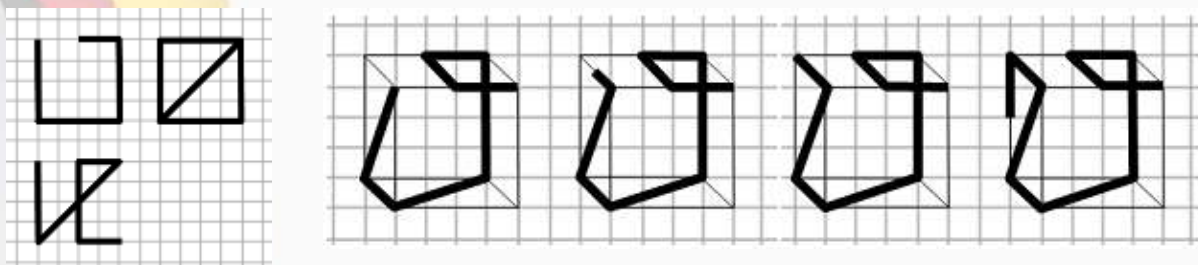
Assignment. 6-in the beginning part of the picture, a drawing consisting of three main proxies of the model, which is twisted by a wire of a certain thickness, is drawn. The joints of the Sim-model were located on the edges of the cube and on the diagonals of the side collars. Follow the technical picture of the solution.

Additional instruction. It is recommended to take that each qa-rest corresponding to the Model joints will be equal to half of the diagonal of the edge or side edge of the cube.

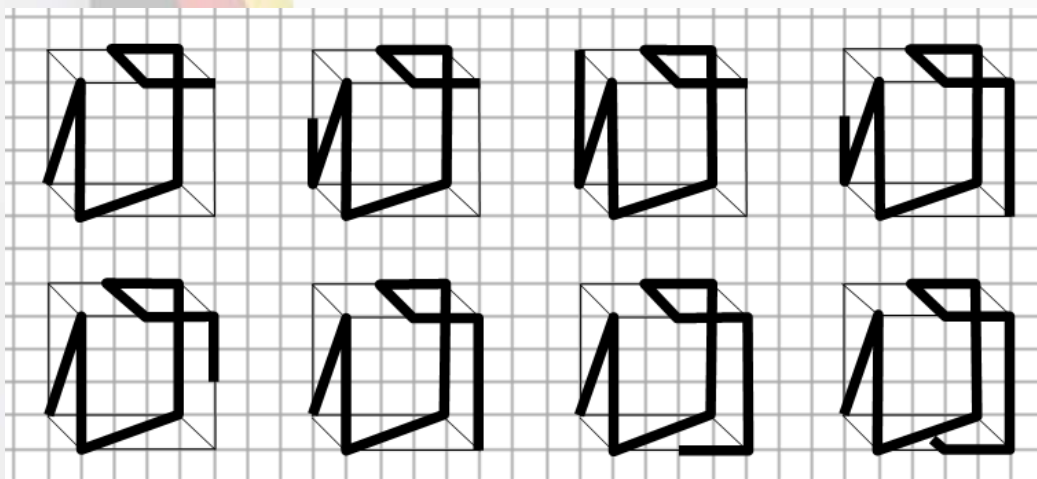


5-figure.

Solution. Experiments have shown that the issue has solutions in two categories. In the 6-th part of the picture to the right, the technical drawings of the 4 different solutions in the first category are presented. In Figure 7, the solutions that make up the 2-th category are presented, the number of which is equal to 8 units.



6-figure.



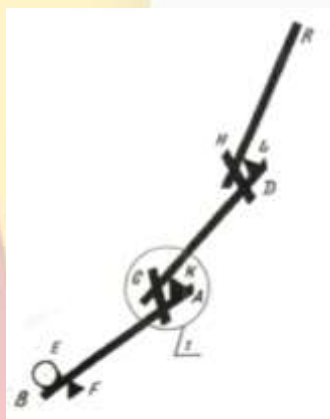
7-figure.

Additional assignment. From a total of 6-and 7-pictures of 12 solutions, indicate that the model requires the shortest wire consumption to be built.

Correct answer. 2 pieces: 1) 6-1 of 4 pieces of model, which are acted on the right side in the picture; 2) 7-1 of the 8 models described in the picture. 6-when making a model with three main proxies on the left side of the picture by the shortest wire consumption, these two solutions are considered an acceptable solution.

We have dedicated one of our experiences to the development of technical creativity skills with the help of geometric-graphic lo-stacking in students-to work on drawings related to the history of the culture of Central Asian countries. The essence of this experience is lower.

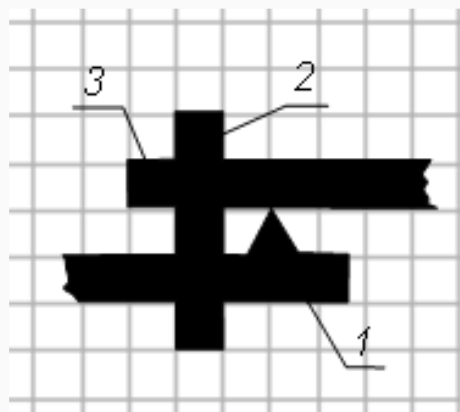
One of the many remarkable works of the great thinker Abu Ali ibn Sina is called "me'yar ul-uqul" [4]. The book describes more than a dozen different mechanical devices. A valuable place for us in the book is the fact that it also places on the drawings of those devices. From the drawings bi-ri konturlar consists of an image formed by painting the inside of the cedar with snow, in which a series made of three Pebbles is depicted. Two pinks on the two edges with a pishang in the Middle, another species is attached in the imitation of "pish-Moshik" with the participation of intermediate H and C joints (larvae) (Figure 8).



8-figure.



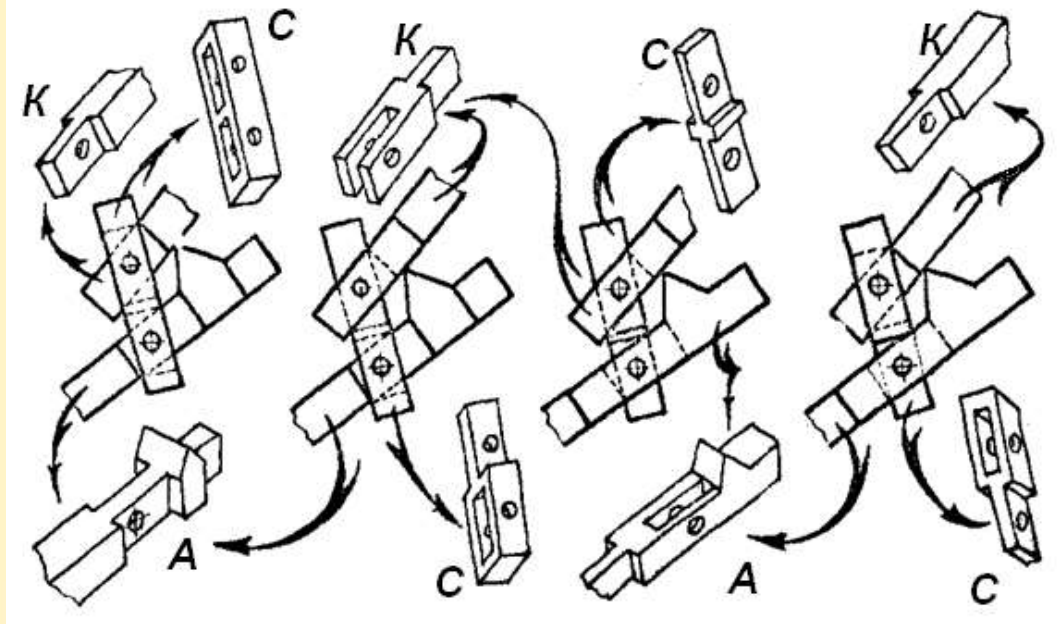
9-figure.



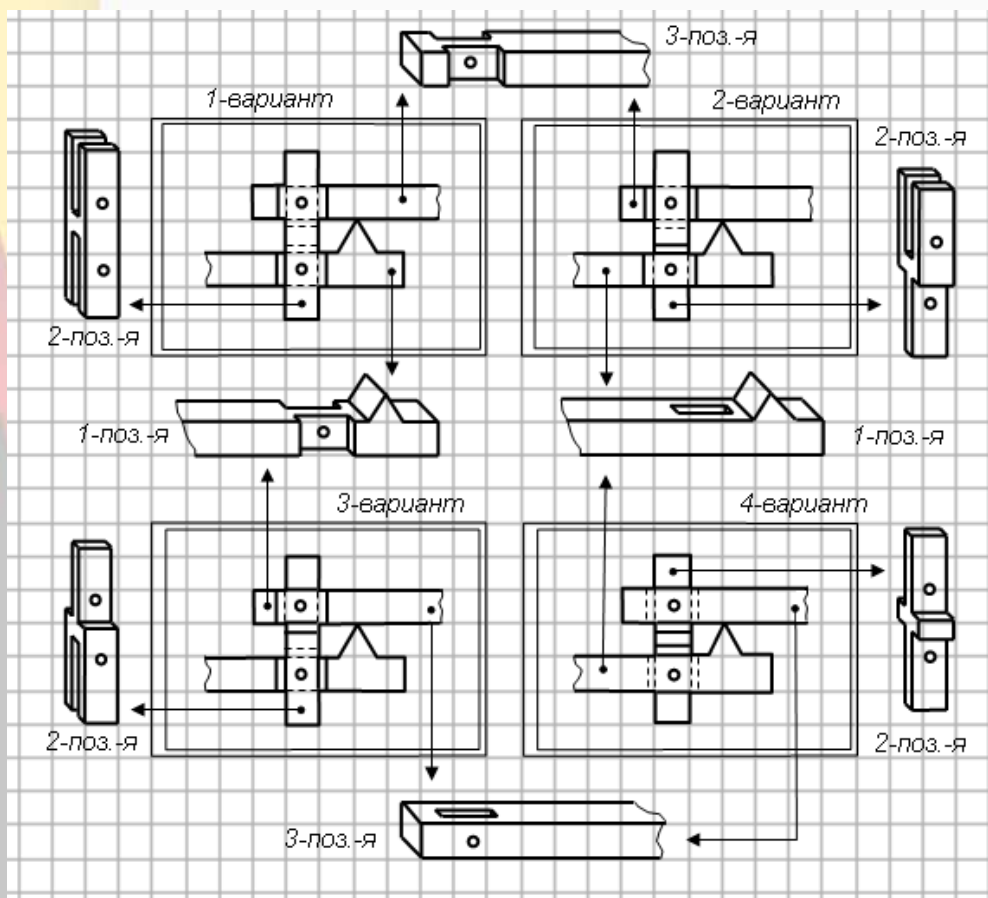
10-figure.

Assignment. Draw a line painted in the same snow as the Cedar (Figure 8) on the basis of the corresponding conesturlar make the appearance of the resulting drawing. Bake A, D and C, as well as take a square-shaped cross-section of the sticks of H and C rhinestones. The device also has a symmetry plane that is parallel to the drawing plane.

For a more understandable explanation of the task, the teacher draws the attention of the pupils to the I fragment, which is enclosed in a circle in Figure 8 and separated separately. In Figure 9, the same fragment is given in the form of an enlarged one. On the basis of this fragment of the device drawing, the teacher shows the students approximately what kind of views the solutions can be-according to the league, the pictures of khomaki, which he himself did (Figure 11) [1], [3].



11-figure.



12-figure.

Taking into account the fact that the identified solutions should be submitted by the students in simple drawings, the teacher presents the assignment in the form of a model fragment in which a special (standing or lying) situation is given to the elements identified in it as 1-, 2-, and 3-positions (figure 10). Alo-hida is given importance to The Walking of the contours of invisible parts of the grass on the barcode.

After the discussions and feedback that have passed over a certain period of time, the training notes that the 1-, 2- and 3- positions have appearance options as in the figure 12, the solutions can again be in 4 different options as shown in the figure (Figure 12) in the drawings that they draw themselves.

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