



Workshop



INTERACTIVE GINMA TEXTBOOKS IN CREATIVE GEOMETRY TEACHING

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This workshop is focused on the aspect of visualization in geometry teaching. We use visualization as a basic tool in the study of all major geometric topics. On the workshop, we consider the samples of visualization with GInMA software for teachers and students.

We introduce participants with free DGS GInMA

<http://deoma-cmd.ru/en/Products/Geometry/>

There are many GInMA electronic textbooks in Russian and some of them are translated into English. All the pictures in these books are interactive. We will show how to get the interactive solutions of problems by clicking on the textbook Figures after the GInMA software have been installed from the website.

At first, we show the basics of working, simplest instruments, tooltips using and moving inside GInMA textbook. As an example we take GInMA textbook "Transformations".

In this 120 minutes workshop we show

- different types of the symmetry: with respect to the point, to the line, to the plane, to the circle,
- the concepts of polar correspondence and inverse correspondence,
- the homography (projective transformation),
- we consider triangles centers properties using different transformations. We use properties of the triangle centers to construct the mapping in a convenient way.
- we show Steiner's mapping of the straight line in common case and in some special cases,
- projective transformations of the planes which transform a group of triangles to the group of regular triangles.

Then we consider the samples of visualization with GInMA in solids geometry, show some flexible polyhedrons and possibilities of there moving.

Visualization in geometry with the use of GInMA allows to make transformations in a comfortable pace, to perform the necessary intermediate transformations, to provide repetitions. Students make the entire logical chain of transformations and change the parameters of these transformations. Such regime helps students to understand the topic, not mechanically memorize.

If you want to become acquainted with GInMA or if you plan to attend the workshop with your laptop, please install free GInMA software from the website <http://deoma-cmd.ru/en/Products/Geometry/GInMA.aspx> Prior experience with GInMA is not necessary. The knowledge on how to use GInMA and its tools will be introduced. At the end of the workshop you can create yourself the interactive geometric draft.