

**Creating dynamic geometry
constructions as composition tools
in art and photography**

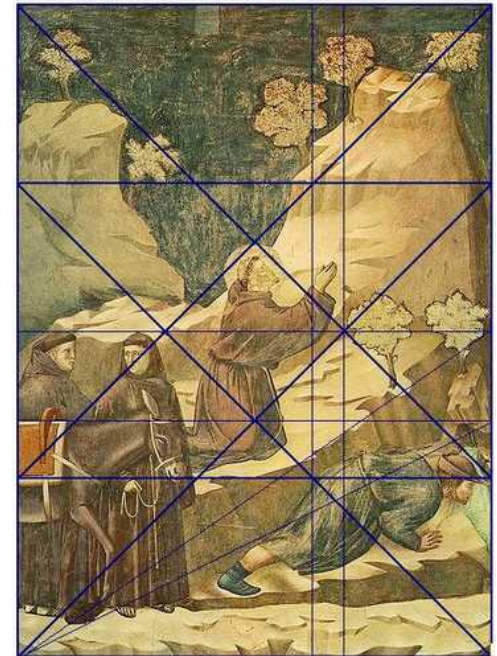
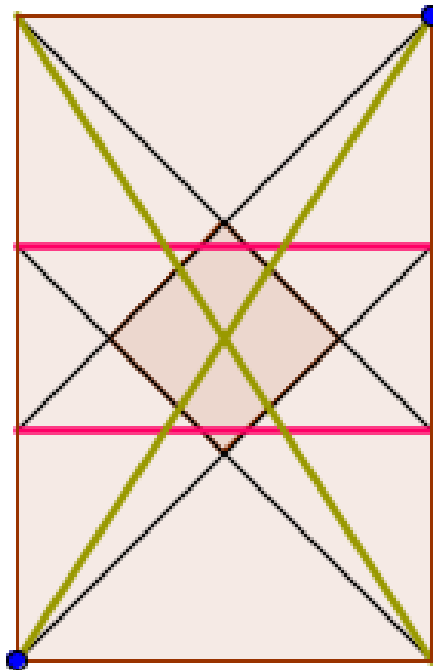
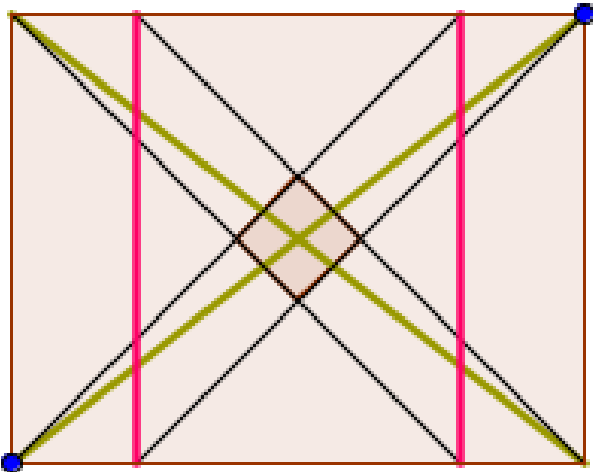
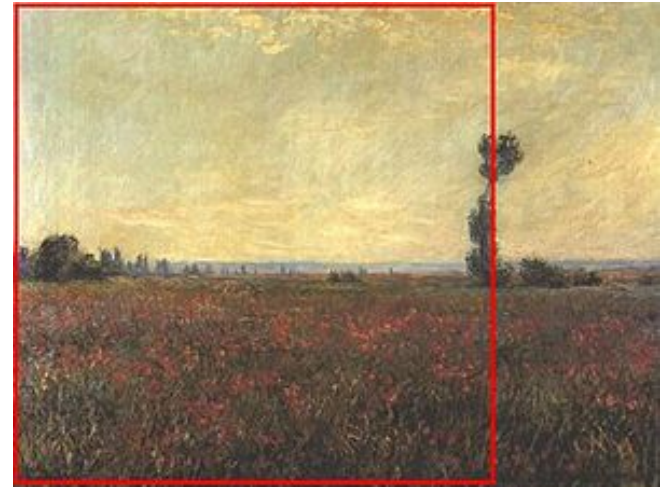
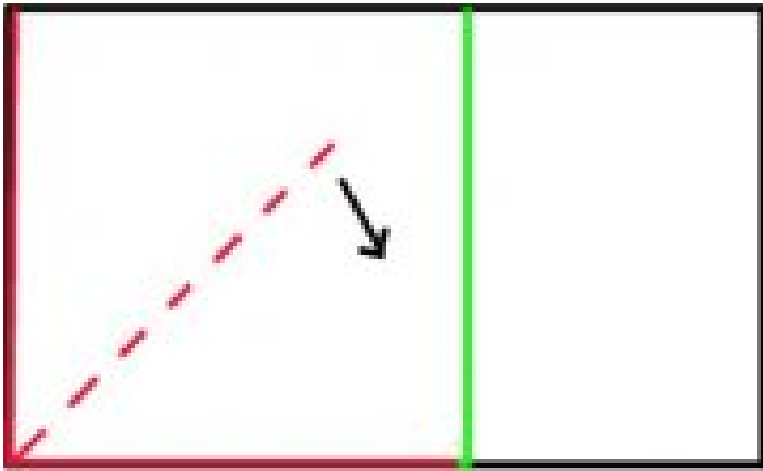
Evgenia Sendova, Toni Chehlarova

Seeing is not as simple as it looks

The idea behind this chapter is:

- **to motivate better the study of geometry for students with interests in art by revealing for them the strong relation between the esthetics of an artistic compositions and some geometric principles;**
- **To consider several methods for studying and creating compositions in art**
- **To create dynamic consturctions (in GeoGebra) for implementing these methods**

Rabatment



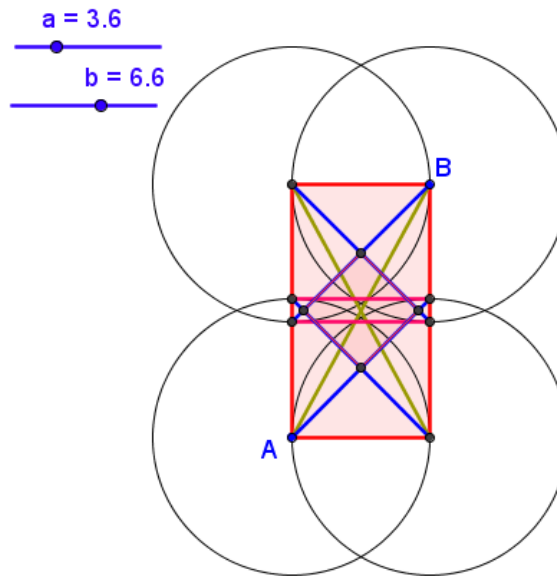
Creating a Rabatment button (in GeoGebra)

Step-by-step description of the process

The screenshot shows the GeoGebra interface with a menu bar (File, Edit, View, Options, Tools, Window, Help) and a toolbar. The left sidebar contains a list of objects:

- Free Objects:
 - $A = (-1.14, 1.98)$
 - $a = 5.8$
 - $b = 3.3$
- Dependent Objects:
 - $B = (4.66, 5.28)$
 - $C = (-1.14, 5.28)$
 - $D = (4.66, 1.98)$
 - $a_1 = 5.8$
 - $b_1 = 5.8$
 - $b_2: y = 1.98$
 - $c: y = 5.28$
 - $c_1 = 3.3$
 - $d: x = -1.14$
 - $d_1 = 3.3$
 - $e: x = 4.66$
 - МНОГОЪГЪЛНИК1

The main workspace shows a red rectangle with vertices A, B, C, and D. Dimension lines indicate $a = 5.8$ and $b = 3.3$.



The screenshot shows the 'Tools' menu in GeoGebra. The menu items are:


- Tools
- Window
- Help
- Create New Tool ...
- Manage Tools ...
- Customize Toolbar ...

The screenshot shows the 'Create New Tool' dialog box in GeoGebra. The dialog has three tabs: 'Output Objects', 'Input Objects', and 'Name & Icon'. The 'Output Objects' tab is selected, and the list of objects includes:

- Quadrilateral многоъгълник3
- Segment a_1
- Segment b_1
- Segment c_1
- Segment d_1
- Segment g_1
- Segment h_1

The dialog also has buttons for 'Cancel' and 'OK'.

Inserting images on the GG screen

 **Slider**


Check Box to Show / Hide Objects

Insert Text

Insert Image

Relation between Two Objects

Options Tools Window Help

 **Insert Image**

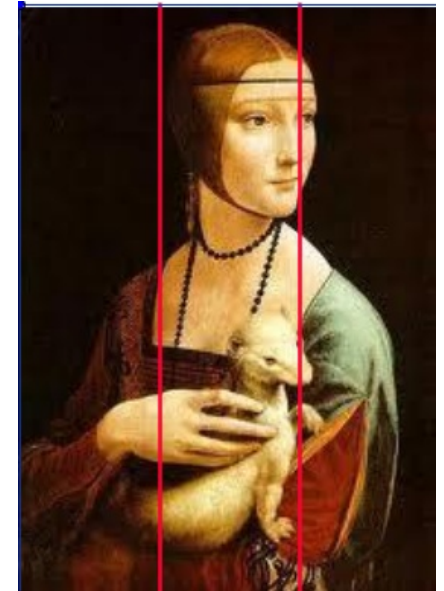
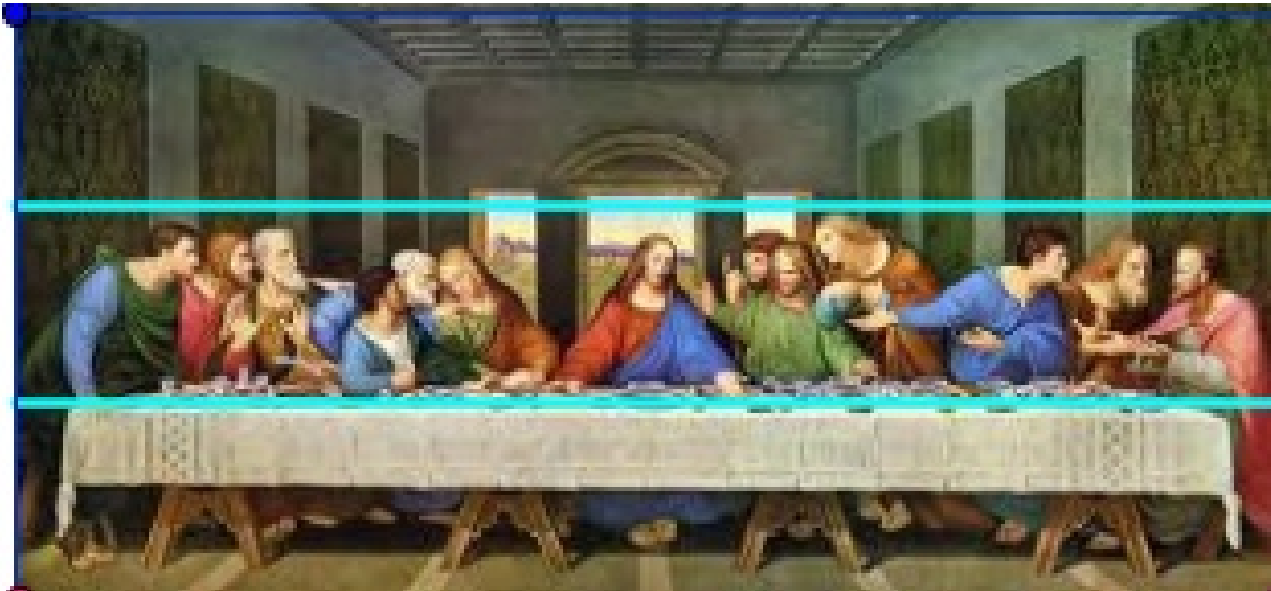
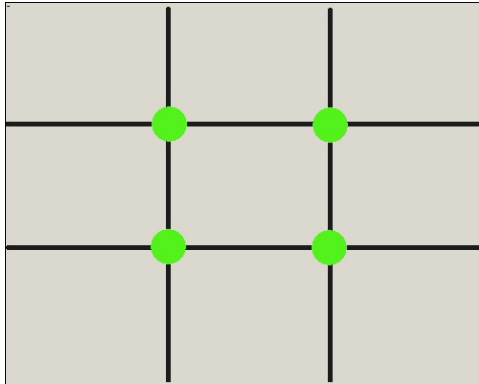
541243715_47defae641_o
img26
New Bitmap Image
New IrfanView BMP File

img26.jpg

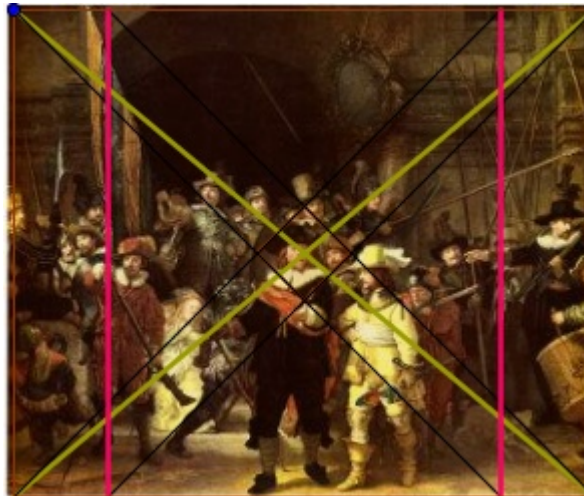
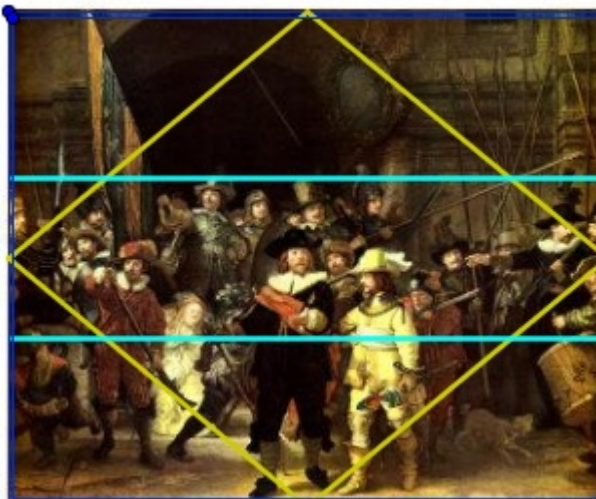
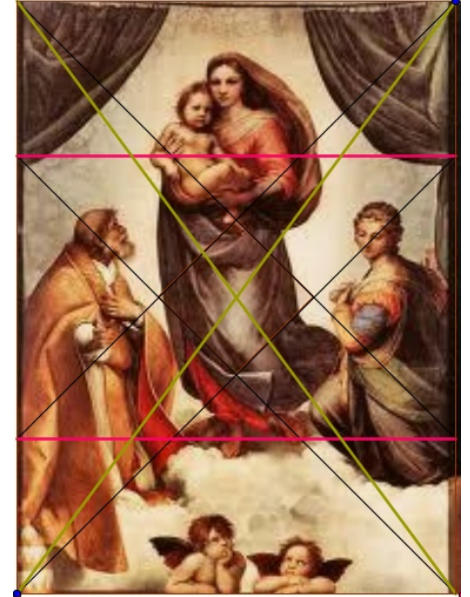
Image (.gif, .jpeg, .jpg, .tif, .png, .bmp)



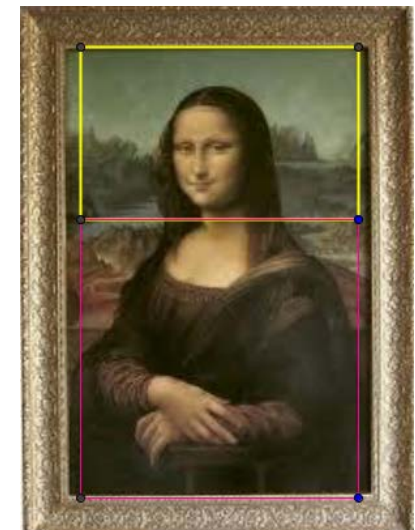
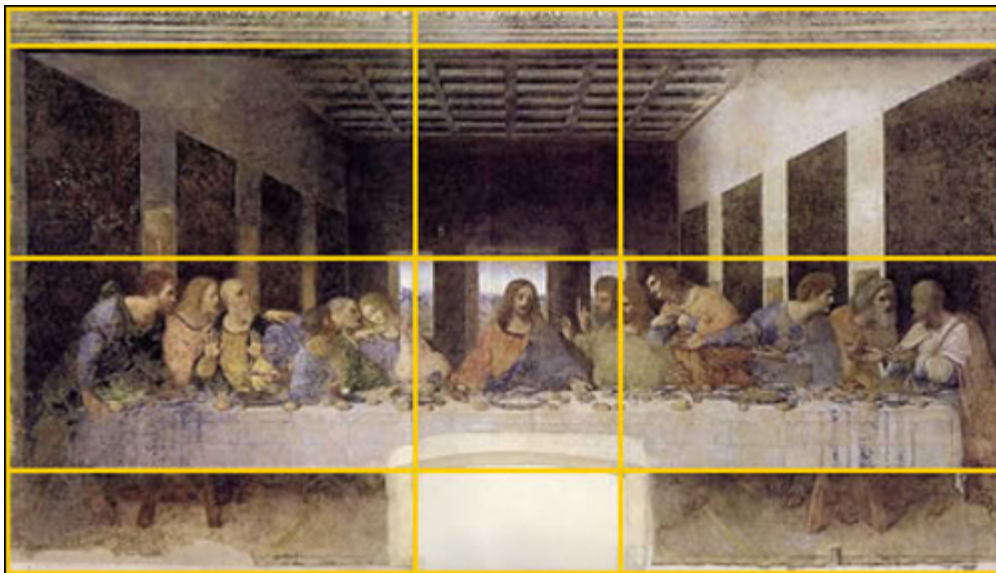
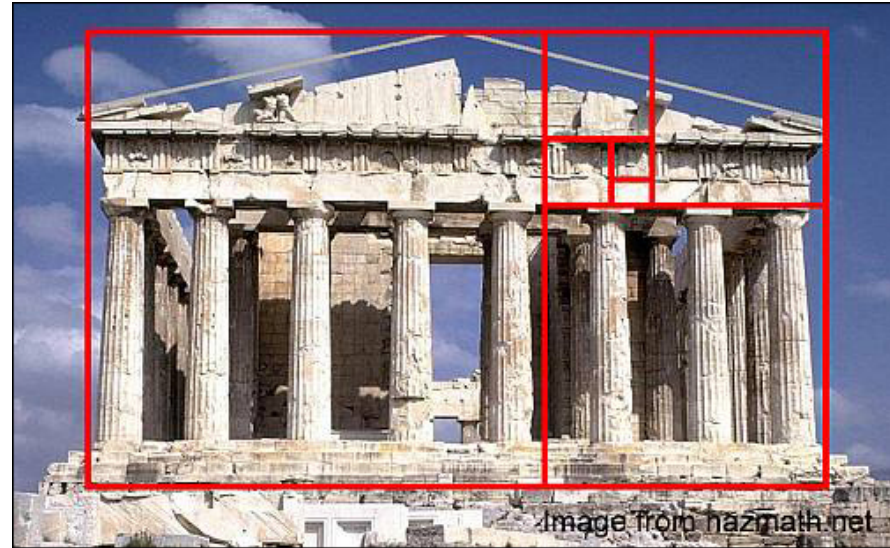
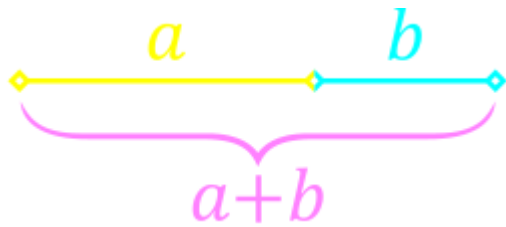
The rule of thirds



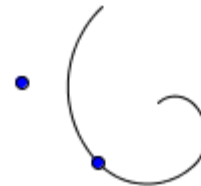
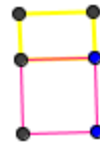
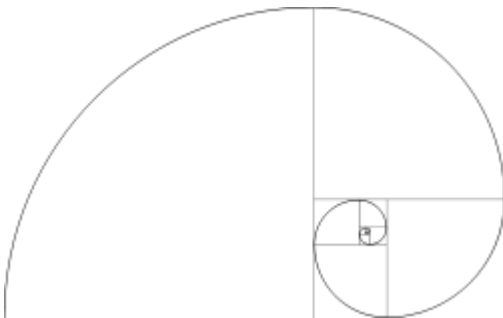
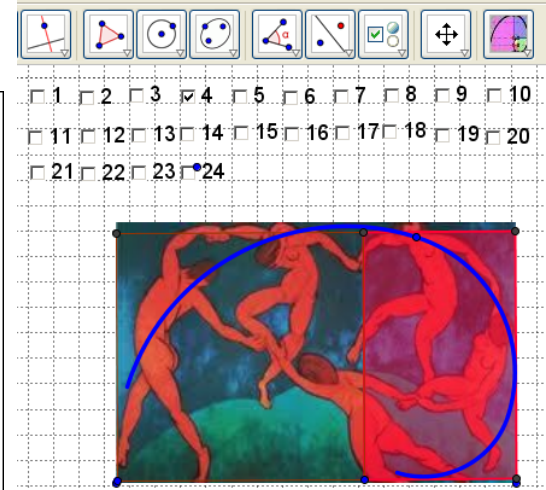
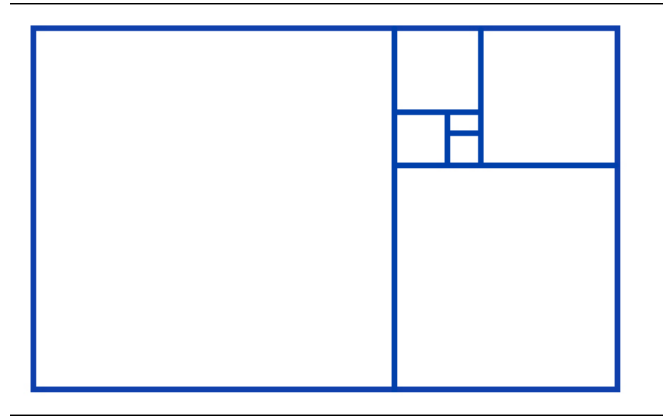
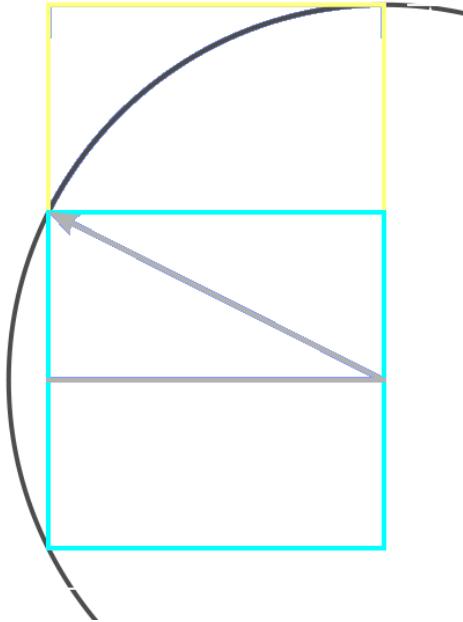
Combining the methods



The golden section in art



“Golden” buttons in GG

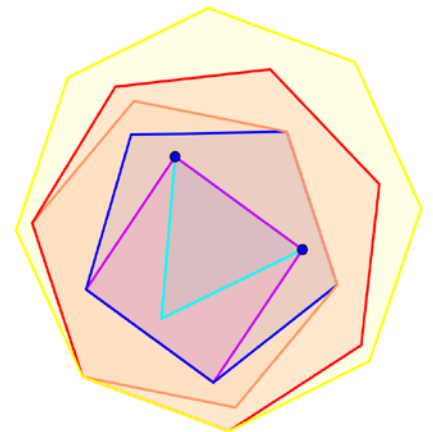


Dynamic mini-projects

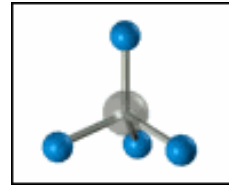
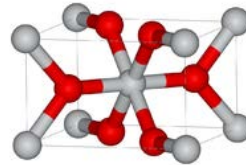
1. Arrange for a picture in two ways (according to two methods for composition):
 - 6 persons at a birthday party sitting around a round table
 - a class of 24 pupils and their teacher
 - flowers and fruits
 - perfumes and an advertisement

Explore the result with dynamic constructions and make corrections if necessary.

2. Create a dynamic construction in the style of the artist Max Bill

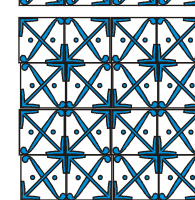
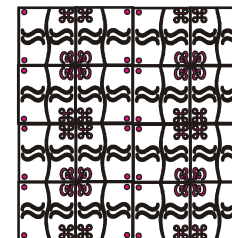
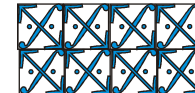
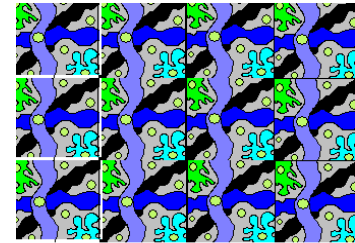
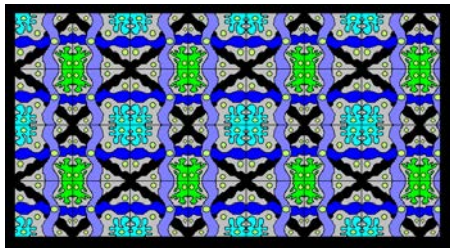
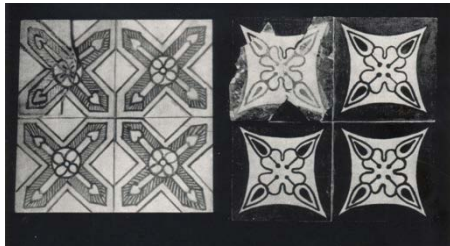


Visual Modelling based on symmetry



Congruences and design

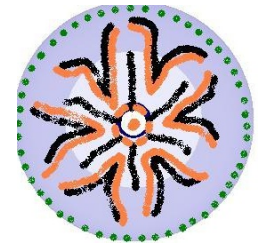
Painted ceramics from Veliki
Preslav and a modern
tessellation



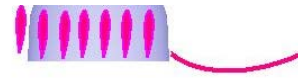
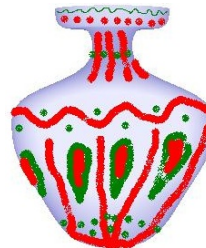
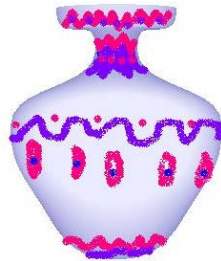
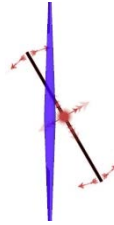
Model in the style of “Trojan drop”



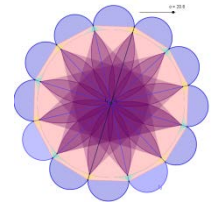
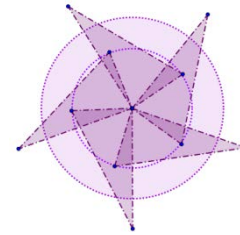
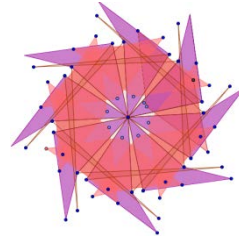
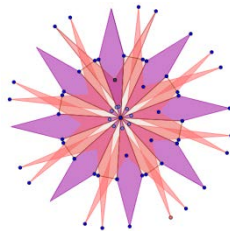
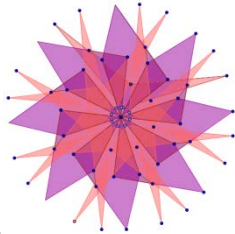
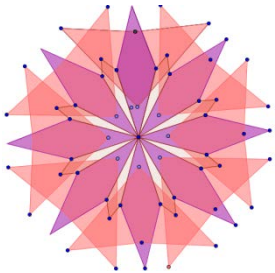
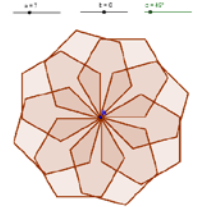
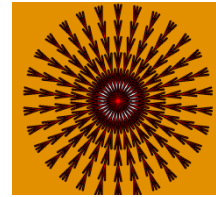
www.balkanfolk.com



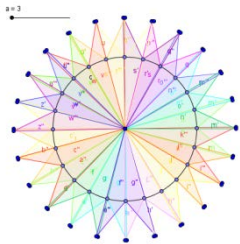
Modern and ancient artefacts based on rotation



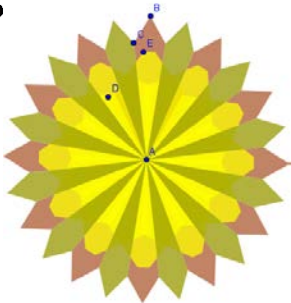
Wood-carved ceilings from Triavna and Plovdiv and some computer models



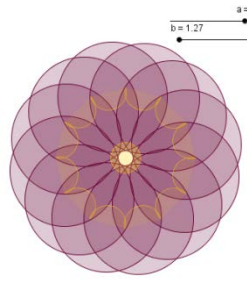
D1.ggb



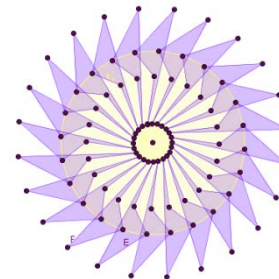
D2.ggb



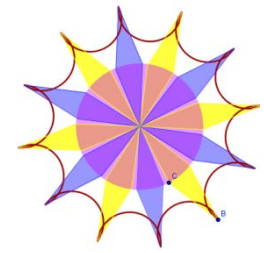
D5.ggb



D6.ggb



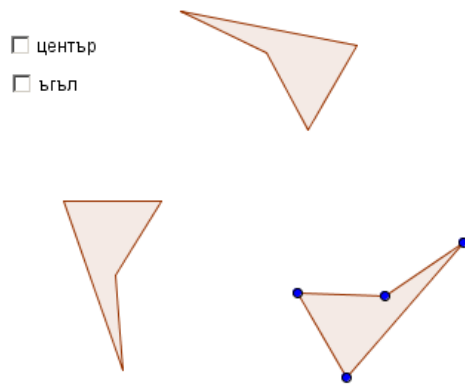
D9.ggb



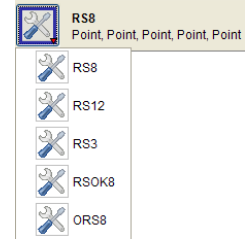
D10.ggb

Harnessing the rotational symmetry dynamically in a design context

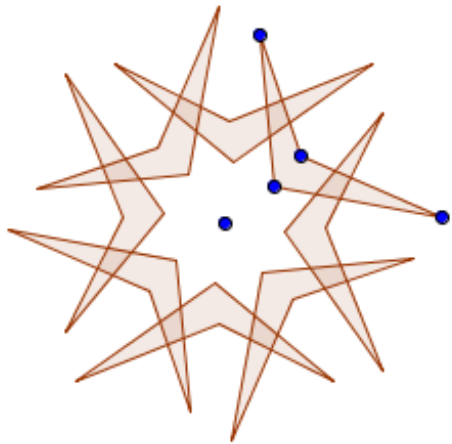
Number of rotations n				
Angle α				



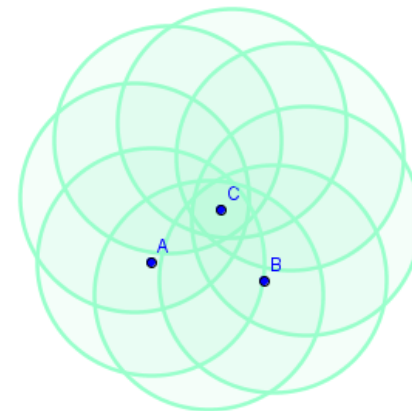
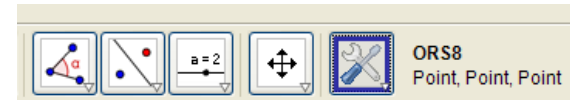
Create your own button (icon)



with a fixed angle of rotation



for rotational symmetry of a circle



Brs.ggb

Pro.ggb