

# Geometry Explorer

## Basic objects

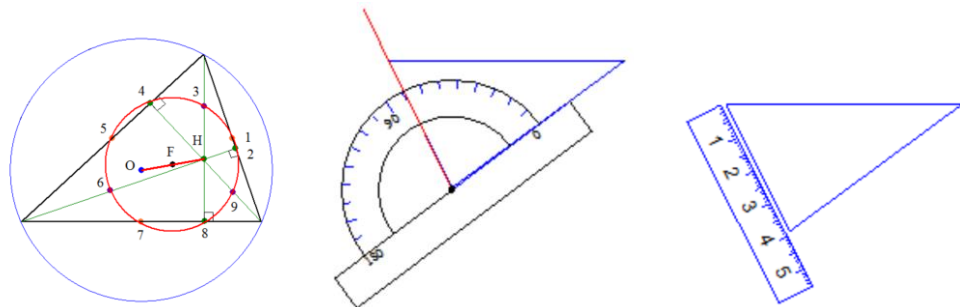
**Figures:** triangle, square, rectangle, parallelogram, rhombus, general polygon, circle, ellipse, trapezoid

**Elements:** point, line, segment, angle, parallel lines, axis, coordinate system, vector, arc, sector, elliptic arc and sector

**Operations:** translation, rotation, changing length and shape, scaling up and down, reflection in line, inversion in point, binding the figures into groups.

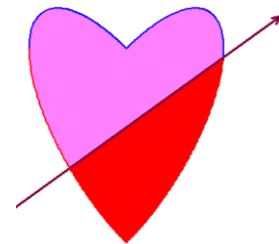
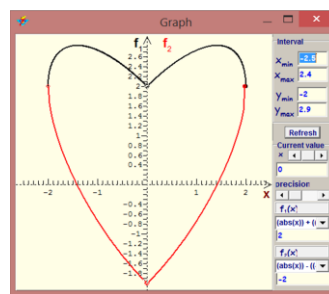
**Editing tools:** changing color and style of lines, color filling, style of text.

Automatic and manual measurements of Length, Distance, Area, Angle using ruler and protractor.



Copying of graphs of functions to geometry' window:

$$|x| + \sqrt{4 - x^2}$$
$$|x| - \sqrt{4 - x^2}$$



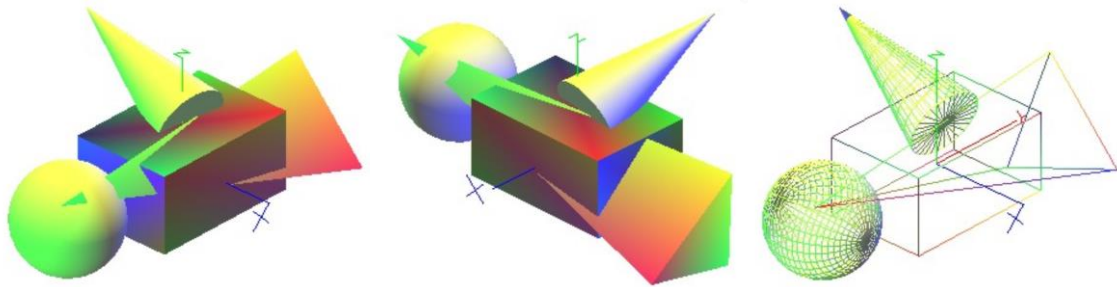
Basic constructions: bisector, midpoint, perpendicular

Symmetry operations

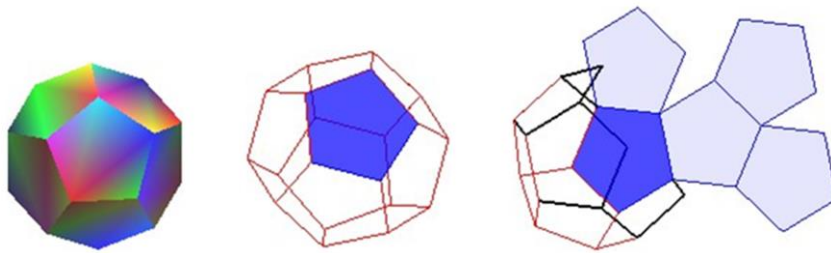
Operations with vectors

Analytical geometry (coordinates, line equations)

## Solids



Polyhedrons, plane, sphere;  
Translations, rotations, scaling up and down,  
Intersections, skeleton and stereotype view, unfolding



## **XPress-Tutor**

Content-based problems in Math-Xpress environment

3 modes of operation: Learn, Train, Test

Learn = General Help + List of Steps + Help to step +  
+ Step's Result

Train = Learn + Multiple choice to each step

Test = Multiple choice of the final step +  
recognition of student's input + no intermediate help or hint

## **Features**

random parameters, calculated step's results,  
open interactive environment.

## **TDL – Test Development Language**

Interpreter, enabling compiling of content-based tasks

## **Task Editor**

External module, enabling compiling of tasks by  
unexperienced in programming people.

Series of tasks developed cover standard curriculums  
on:

Arithmetic, Elementary Algebra and Geometry for primary and  
intermediate schools, Algebra, Trigonometry and Introduction to  
Calculus for high schools, Calculus, Linear Algebra, Differential  
Equations, Probability and Statistics for universities and colleges.