

Software Evaluation

Software Title: Geometer's Sketchpad

Publisher: Key Curriculum Press
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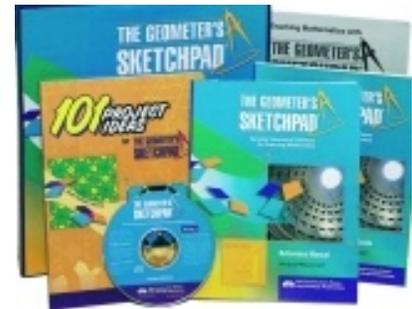


Price:

- School/Institution License – New License
 - Price per computer
 - \$69.95 (1-4 computers)
 - \$30.00 (5-19 computers)
 - \$25.00 (20-49 computers)
 - \$20.00 (50-99 computers)
 - \$15.00 (100+ computers)

- Multi-Student Home-Use Non-expiring License
 - Price per student
 - \$29.95 (1-29 students)
 - \$20.00 (30-99 students)
 - \$15.00 (100+ students)

- Multi-Student Home-Use 1-Year License
 - Price per student
 - \$9.95 (1-29 students)
 - \$6.00 (30-99 students)
 - \$4.50 (100+ students)



There are other prices available for Teachers, Individuals, and Students. There are prices for both new purchases and for upgrades. These prices can be found at <https://keydrm.keypress.com/v3/orders/new?product=gsp>.

Minimum Hardware Requirements: Geometer's Sketchpad (version 5) is a downloadable application that can be installed over a network.

- Windows
 - Pentium based system or equivalent
 - Windows XP or later (including Vista and Windows 7)
 - 300 MB free disk space
- Macintosh
 - PowerPC or Intel based system
 - Mac OS 10.4 or later
 - 300 MB free disk space

Grade Level: 3-12

Subject Area: Mathematics (including elementary and middle school math, algebra, geometry, pre-calculus, and calculus)

Type of Software: Mathematics demonstration, exploration, investigation, and presentation software

Description: Geometer's Sketchpad is a tool that will help students to build on and expand their knowledge in algebra and geometry. It provides hands on activities as well as gives students a visual way to help them understand the material. Geometer's Sketchpad is also aligned with the Common Core State Standards.

Instructional Objectives: Geometer's Sketchpad is a very broad program and will cover mathematical content from many different courses. Listed below are some of the strands of the standards that can be covered using this program. This software can be used to create a lesson or activity that covers the standards underneath each one of these strands.

- **HSCE:**
 - Strand 1 – Quantitative Literacy and Logic
 - Strand 2 – Algebra and Functions
 - Strand 3 – Geometry and Trigonometry
 - Strand 4 – Statistics and Probability
- **CCSS:**
 - Strand N – Numbers and Quantity
 - Strand A – Algebra
 - Strand F – Functions
 - Strand G – Geometry
 - Strand S – Statistics and Probability

Geometer's Sketchpad also meets the requirements of the Michigan Educational Technology Standards (METS) for K-12 students. The strands, listed below, are covered with this software. Each lesson or activity covers the standards underneath each of these strands.

- **Technology Standards:**
 - Standard 9-12.CI. – Creativity and Innovation
 - Standard 9-12.CC. – Communication and Collaboration
 - Standard 9-12. CT. – Critical Thinking, Problem Solving, and Decision Making
 - Standard 9-12. TC. – Technology Operations and Concepts

Provided below is an example of types of lessons that could be done through this program. It shows the objectives of the lesson and the standards that it covers.

Lesson: Perfect Packages: Surface Area and Volume (Grade level 5-8)

- Lesson Objectives:
 - Find the surface area of a rectangular box.
 - Determine which rectangular prisms have the least and greatest surface area for a fixed volume.
- HSCE Standards:
 - Standard G1.8.1 – Solve multi-step problems involving surface area and volume of pyramids, prisms, cones, cylinders, hemispheres, and spheres.
 - Standard G2.2.1 – Identify or sketch a possible 3-dimensional figure, given 2-dimensional views (e.g. nets, multiple views); create a 2-dimensional representation of a 3-dimensional figure.

- CCSC Standards:
 - Standard G-GMD.3 – Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.
 - Standard G-MG.3 – Apply geometric methods to solve design problems (e.g. designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios.)
- Technology Standards:
 - Standard 9-12.CC.3 – Collaborate in content-related projects that integrate a variety of media (e.g. print, audio, video, graphics, simulations, and models)
 - Standard 9-12.CT.1 – Use digital resources (e.g. educational software, simulations, models) for problem solving and independent learning
 - Standard 9-12.TC.6 – Participate in a virtual environment as a strategy to build 21st century learning skills

More information on this lesson can be found at <http://www.keypress.com/x24417.xml>. This includes the student sketchpad, overview, activity notes, student worksheet, tips, technology strengths, and other resources.

Ratings:

5 = Excellent 4 = Good 3 = Average 2 = Weak 1 = Poor N/A = Not Applicable

	5	4	3	2	1	N/A	Comments
Appropriate and timely feedback provided		X					Geometer’s Sketchpad is interactive software. The constructions, transformations, and graphs are instant. The lengths, angle measures, areas, perimeters and other measurements will all be modified as the construction or diagram is changed. It is easy to see the connections and relationships between the different constructions and how they change. There is no feedback about the constructions as they are being put together.
Motivational and student control	X						This program is student controlled. Students have the following options: display, construct, transform, measure, number, and graph. In a planned activity, students still have the freedom to use these tools. Students are allowed to investigate which helps to keep them interested.
Meets instructional goals & objectives	X						This is a very broad program providing a lot of flexibility for teachers and students. An activity can be created using this software that will directly correlate to the goals and objectives that are being taught.

Ease of use	X						The layout of this program is very organized and has a simple visual appeal. There are a number of tutorials and help options. It might take a little time to get used to the software and how it works, but it becomes very easy to use after spending a little bit of time with it.
Assessment features						X	There is no build-in assessment feature to this program. The best way to monitor students is to ask questions as they are going through their investigation. Students can also save their work for submission.
Documentation and directions	X						The help menu and website provide a lot of assistance. There are tutorial videos explaining how to use Sketchpad. There are tips and a reference center to help the users utilize this software. There are also online courses and webinars for teachers.
Evidence of effectiveness	X						This software has won 11 awards. The list can be found at http://www.keypress.com/x24081.xml . There is research showing the effects on student achievement and the enhancement of geometric thinking. It also showed that students could easily recall what they had learned while using this program. This research can be found at http://www.keypress.com/x24806.xml . There are also testimonials from teachers saying how valuable the software is and how it excites and engages students.
Developmental & age appropriateness	X						This program is designed for 3 rd through 12 th grade. There are pre-made activities and corresponding worksheets for different grade levels and mathematical subjects, such as algebra, geometry, and calculus. More direct instruction would be needed for younger students due to advanced vocabulary.
Content accuracy and non-biased	X						Information is current and accurate. The information that comes with Geometer's Sketchpad and its supplemental resources are aligned with the Common Core State Standards.
Testing & evaluation features						X	There is no build-in assessment feature in this program. The best way to monitor students is to ask questions as they are going

higher order thinking skills. Students could work on activities in small groups, pairs, or individually. In a classroom setting, it would also be beneficial for students to present their findings to the class as a whole. There could be different methods to finding the solution, and the students would be able to share their methods with the class which could then lead to a discussion.

Best Features: Version 5 of Geometer's Sketchpad has some awesome new features. It has all of the mathematical features that it had before, and now it also has the features similar to an interactive whiteboard. There is also a new feature that allows you to use the mathematical symbols to write/describe what is happening. Notation is really important in math and it is now incorporated in this program. There are color coding options and ways to label objects for clarity. This program is easy to use for teachers and students after a brief introduction.

Worst Features: This program does not include any assessment or evaluation tool. It is up to the teacher on how they want to monitor student work and assess their learning. Another downfall of this software is the price. Schools do not have a lot of extra money to purchase different technology and software. It would be more reasonable to put this software into one or two computer labs. With a 1-to-1 laptop initiative, it would be difficult for school districts to purchase hundreds of licenses to have the program available to all students. At my school, it is not encouraged to ask students for money to support a required class. It would be more likely that my school district would encourage teachers to find a similar product online that provides a free download. However, free versions do not always include all the same tools or options as purchased software.

Overall Quality: Geometer's Sketchpad is a great product that I would recommend to my school district. It is used to assist in the learning of any mathematical content. It is a very broad program, which allows for lessons and activities to be created for a large variety of topics. There are pre-made activities that can be used, but it can also provide a very open-ended scenario to push students in their learning. I would recommend purchasing and using this technology for use in a mathematics classroom. There is research and testimonials that show the many benefits for both the teacher and the students that use this product. It provides an exciting and engaging way to learn mathematics. The number of licenses that are purchased would be decided by the district based on the computer situation and the amount of money that could be put towards such a purchase.