

# MATHEMATICS CLASSROOM RESOURCES

These resources focus on the importance of the mathematics academic standards and the Standards of Mathematical Practices. The activities described below are selected to be engaging and appropriate for your students' grade level - kindergarten to high school. Along with these resources, there are many more within the Standards Aligned System ([www.pdesas.org](http://www.pdesas.org)) under Materials and Resources and in the Math Professional Learning Community.

If you have any questions about these or other resources, contact Kevin Mauro at [kmauro@pa.gov](mailto:kmauro@pa.gov).

## Online Instruction NCTM - Recorded Presentations

[Making the Shift to Online Math Instruction: Supporting PreK-16 Educators in Online Pedagogy](#)

[Taking Your Online Instruction to the Next Level: Exploring How Effective Instructional Strategies Work in Online Environments](#)

## Classroom Materials

[Print Free Graph Paper](#)

Print graph paper free from your computer. This site is perfect for science and math homework, craft projects and other graph paper needs. All graph paper files are optimized PDF documents requiring Adobe Reader for viewing.

[Graphing/Charting and General Data Visualization App](#)

Charts are a great tool because they communicate information visually. On meta-chart.com you can design and share your own charts online and for free.

## Curriculum/Lesson Resources

[XtraMath](#) (Grades K-6)

A free program that helps students master addition, subtraction, multiplication, and division facts.

### [FreeMath](#) (Grades 1-5)

A math program covering every math skill that should be taught for Grades 1 through 5. Its unique design will make your job as a teacher easier while dramatically increasing the efficiency of the math learning process for students. While all math programs teach nearly the identical content, Practice materials are printed on a skill by skill basis and each problem is already printed on the paper (no re-writing) and leaves room for calculations.

### [ck12.org](#) (Grades 1-5 by concept, Grades 6-12, by concept or textbook)

CK-12 Foundation is a non-profit organization dedicated to increasing access to high quality educational materials for K-12 students all over the world. We offer free high-quality, standards-aligned, open content in the STEM subjects.

- FlexBooks – Books are fully customizable and can easily be kept up-to-date. You can rearrange the chapters or even add, remove, and edit content.
- Concepts – These bite-sized lessons can be added to a FlexBook or assigned directly to students for independent learning.
- Interactive Learning Objects – Videos and multimedia simulations bring learning to life.
- Exercises – Enable students to track their progress with instant feedback.
- Teaching Materials – Get assessments, answer keys and ideas for differentiated instruction.

### [Pbslearningmedia](#) (Grades K-HS)

WTF and PBS have curated FREE, standards-aligned videos, interactives, lesson plans, and more for teachers. Learn math concepts to life through interactive games, animations and engaging media resources.

- K-8 Mathematics ranges from counting cardinal numbers to linear equations and functions. Students can review the calculation of area using a Cyberchase video, continue on to find the area of combined shapes using a Math Active interactive lesson, and can be assessed on their understanding using Khan Academy. Similar units can be created on topics such as lines and angles, probability models, and the multiplication and division of fractions.
- High School Algebra takes students on a mathematical journey that starts with evaluating simple single variable expressions, continues with linear systems, and challenges them with graphing multi-variable equations. Students will see how math is used in real-life scenarios, ranging everywhere from pipefitting to designing a dress with a Project Runway winner. Students are also challenged to find maximum and minimum points on the graph of a quadratic formula, solve for unknowns on a number line, and brew the perfect cup of coffee using algebra.

### [HippoCampus.org](#) (Grades 9-12)

Math academic web site that delivers multimedia content--videos, animations, and simulations--on general education subjects to middle-school and high-school teachers and college professors, and their students, free of charge. Teachers project HippoCampus content during classroom learning and assign it for computer labs and homework.

### [Open Up Math Resources](#) (Grades 6–8)

- Student Materials – digital & print
- Teacher Materials – including unit plans, lesson plans, digital and print assessments
- Scope & Sequence
- Integrated, lesson-specific supports for ELLs within every lesson
- Lesson-level strategies for students with disabilities
- Family Resources

### [Mathematics Assessment Project](#) (Grades 6-HS)

The Project's materials are of two complementary kinds:

- [Summative tests or tasks](#) exemplify the performance targets that the standards imply. The tests show the kinds of performance that students in rich math programs will achieve, with the range and balance that the standards describe.
- [Classroom Challenges](#) are lessons that both reveal and develop students' understanding of key mathematical ideas and applications. They assay students' understanding of important concepts and problem solving performance and help teachers and their students to work effectively together to move each student's mathematical reasoning forward.

### [NCTM Illuminations](#) (Grade K-HS)

Lessons and interactives searchable by NCTM's [Principles and Standards](#) searchable by grade band or category

- Over 700 [lesson plans](#)
- Over 100 [activities](#); these are virtual manipulatives, applets, and games

### [Calculation Nation](#)® (games Grades K-12)

Play online math strategy games against a computer or challenge opponents from anywhere in the world. At the same time, students are able to challenge themselves by investigating significant mathematical content and practicing fundamental skills.

### [Match FishTank](#) (Grades 3- HS)

- Procedural Fluency and Conceptual Understanding
- Opportunities for Practice and Feedback
- Content Task that provide a productive struggle

### [Math Games](#) (Grades K-8)

- Online games and printable worksheets based on grade or skill
- Create custom assignments tailored to student need skill need

### [Math Playground](#) (Grades 1-6)

An action-packed site for elementary and middle school students. Play a math game, solve a logic puzzle.

### [Math T-Charts](#) (Alg 1)

Integrating math into career and technical education (CTE) programs enhances the mathematical concepts that are embedded in career and technical education content. It is a process that provides the opportunity for math and CTE teachers to work together to identify where math intersects with CTE concepts and applications. Students benefit from this team process by having math concepts taught in the same context in the math classroom and the CTE program. Research shows that this model has been shown to have a significant positive impact on student learning in mathematics with no loss to career and technical area content.

### [Phet Interactive Simulations](#) (Grade HS)

PhET Interactive Simulations project at the University of Colorado Boulder creates free interactive math and science simulations. PhET sims are based on extensive education research and engage students through an intuitive, game-like environment where students learn through exploration and discovery.

### [GeoGebra Math Apps](#) (Grade HS)

GeoGebra is mathematics software for all levels of education that brings together geometry, algebra, spreadsheets, graphing, statistics and calculus.

## Cross Curricular (STEM)

### [Agriculture in the Classroom](#) (Grades K-HS)

The National Agricultural Literacy Curriculum Matrix is an online, searchable, and standards-based curriculum map for K-12 teachers. Search our instructional, classroom-ready resources now!

### [NASA Stem Engagement](#) (Grades K-HS)

Teachers can search all resources to find specific lesson plans, videos, publications and websites to enhance traditional science lessons. Science subjects include Earth science, life science, physical science and space. Math and technology are also covered, and grade levels range from kindergarten to college. For hands-on learners, NASA provides educational games that help kids apply and remember core STEM concepts.

- Activities and fun things to do at home
- Resources for educators and students
- STEM lessons from space