

Technology in Action

Guide

Secondary Mathematics

Practice Standards Connections

MP1—Make sense of problems and persevere in solving them.

MP2—Reason abstractly and quantitatively

MP3—Construct viable arguments and critique the reasoning of others

MP4—Model with mathematics

Social Emotional Learning Standards Connections— SEI Goal 2– Use social-awareness and interpersonal skills to establish and maintain positive relationships—directly connects to MP3. Many of these resources can be used in a group or partner situation to build on both MP3 and SEL 2.

MP5—Use appropriate tools strategically

MP6—Attend to precision

MP7—Look for and make use of structure

MP8—Look for an express regularity in repeated reasoning

Online Activities



Illuminations (from NCTM) website has a large collection of interactive activities/games for all grade levels and all standards. Educators can search by standard or grade level. Many of the activities can be used on an interactive whiteboard (smart-board or Promethean). No login is required to use the activities. There are also lesson plans available on the website to work in conjunction with the interactive platform. <http://bit.ly/2woYEqr>



Zombie Math (From Northern Illinois University) is making math horrifically interesting and it isn't hard at all...with ZOMBIES! Prepare for the zombie apocalypse and the ACT exam by playing the ACT prep math game and watching the zombie videos to help liven up math skills. (Also a version of the game for 8th grade PARCC!) There are also lesson plans for educators to help breathe a little life into the math curriculum. <http://www.smartspaceuni.com/zombiemath/>



Wolfram|Alpha is a free online computational knowledge engine that generates answers to questions in real time by doing computations on its own vast internal knowledge base. Our long-term goal is to make all systematic knowledge immediately computable and accessible to everyone. The website can guide you step by step through the process of solving many mathematical problems, from solving a simple quadratic equation to taking the integral of a complex function. When trying to find the roots of $3x^2+x-7=4x$, the website can break down the steps for you if you click the "Show steps" button in the Result pod. This is also a Chrome Extension that will work with ChromeBooks. <http://www.wolframalpha.com/>



Pixar in a box is designed to help students answer an age old question: Why do I need to learn this stuff? Their answer to this question is a series of interactive lessons, each of which demonstrate how a concept introduced in school is used for creative benefit at Pixar. Within the platform educators can choose the grade level mathematics of the lesson...some lessons have multiple options. EX- Lesson on geometric transformations could be grades 7-8 or High school rotation. <https://www.khanacademy.org/partner-content/pixar>



Get the Math (Thirteen.org) is about algebra in the real world. See how professionals use math in music, fashion, video games, restaurants, basketball, and special effects. Then take on interactive challenges related to those careers. There are 9 challenges on the platform, each have a teacher resource with standards aligned lesson plans. There are great student centered- real world - applications used to bring understanding of the use of algebraic concepts. <http://www.thirteen.org/get-the-math/>



Math Playground-This is the page for Interactive Tape Diagrams. There is a "tool" part of the way down the web page - THINK BLOCK TOOL. (There is NEW version that will play on a Chromebook.) One of the best parts of this website is actually further down the page. There are video steps -Six different examples for each of the concepts - Addition/Subtraction, Multiplication/Division, Fractions, Decimals/Percent and Ratios. Students can watch the videos on one open browser while having the tool open in another until they get comfortable with the use of the tool. <https://www.mathplayground.com/thinkingblocks.html>

Mathematical Videos



Mathematics in Movies - This is a collection of movie clips in which Mathematics appears. The site is now in HTML5 video and should be accessible by all devices. If not, chose the direct video links. To include a clip into a presentation, chose the quicktime version. A wide variety of genres and decades, some that students won't recognize but will certainly enjoy the connection. <http://www.math.harvard.edu/~knill/mathmovies/>



WatchKnowLearn is a video platform that has educational videos curated not only by the website developers, but users can also upload videos. The subcategory MATHEMATICS splits into every math content available, from math for young learners to calculus. Educators can create accounts and save videos to a playlist so they are ready when needed in the classroom. Most all are hosted on YouTube and educators are encouraged to review first. <http://bit.ly/2wp01W6>



Safe Share TV is a platform to watch YouTube without any additional videos or advertisements appearing on the screen. By copying and pasting the YouTube link into the box on the home page, the website will generate a new LINK to the video. This link will never expire and now will direct to a video display that removes all the unwanted items. Educators can now place this link in a PowerPoint or an assignment in GAFE (Google Apps For Education) that the students can select and they will not be shown "other" items. <http://safeshare.tv/>

Mobile Apps



Quick Graph is a powerful graphing calculator that takes full advantage of the multitouch display and the powerful graphing capabilities both in 2D and 3D. A simple interface that makes it easy to enter and/or edit equations and visualize them in mathematical notation. It's capable of displaying explicit and implicit (opt) equations as well as inequalities (opt) in both 2D and 3D, in all standard coordinate systems: cartesian, polar, spherical and cylindrical, all with amazing speed and beautiful results, which can be copied, emailed or saved to the photo library. <http://apple.co/2vfj7dK>



ClassPad Mobile APP - Calculator app equipped with powerful CAS graphing calculator functions of the handheld fx-CP400. There is a free version of the CASIO ClassPad app that is available on iOS and Android. The free version allows users to use functions such as basic calculations, graphs, and statistics, suitable for basic course of high school. Website- <http://edu.casio.com/forteachers/er/index.php>
iOS LINK - <https://apple.co/2licXUM>
ANDROID LINK—<http://bit.ly/2rIOXjk>



Math With Your Friends is a fun twist on a classic board game, and a unique new challenge! Instead of letters, tiles show numbers (0-9) and operators (+ - * / =). Instead of words, players make mathematical equations to score points. Increase your score by taking advantage of multipliers on the game board. Invite your friends to play the game directly from your contacts. Use built-in chat to send important messages to your opponent, or simply to brag about your move.
iOS—<http://apple.co/2vfaFeC>
Android—<http://bit.ly/2vfaXxE>



Online Virtual Tools



Draw.io is an online flowchart tool that allows users to create any type of drawing using simple to complex shapes and diagrams. Numbers and text included so student could use this to show the process in completing an equation. The platform has built in shapes that can be dragged onto the page and aligned to build the chart. The drawing can be saved to Google drive, Dropbox or Onedrive or printed out. Users can create an account, but it is not necessary to use the tool. <https://www.draw.io/>



GeoGebra is dynamic mathematics for all levels of education that brings together geometry, algebra, spreadsheets, graphing, statistics and calculus in one easy-to-use package. GeoGebra is a rapidly expanding community of millions of users located in just about every country. <http://bit.ly/2v7fNRY>



Desmos is the best-in-class HTML5 graphing calculator, which millions of students around the world use for free. The platform also has activities on top of that calculator, helping students use a powerful tool to experience all the curiosity, beauty, and sense that math has to offer. Those activities were used so often by so many teachers around the world that they decided to create an Activity Builder, helping every teacher create digital math activities that equal and exceed the activities we create ourselves. Users can create an account to save graphs and data for works in progress. Graphs can be printed or emailed. (calculator platform can be changed into 33 different languages.) (iOS and Android apps available as well.) <http://bit.ly/2v7m1RW>



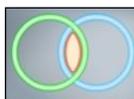
Daum Equation Editor - Online equation editor that will allow the user to save to Google drive, save as an image or text file, increase text and modify the color of different characters in the equation to help educators highlight portions of the instruction. <http://bit.ly/2v7AJ4P>



PhET Simulations from University of Colorado provides fun, free, interactive, research-based science and mathematics simulations. The simulations are written in Java, Flash or HTML5, and can be run online or downloaded to your computer. All simulations are open source (see our source code). Simulations are all grade levels and subjects are physics, biology, chemistry, earth science and math. Users can play with the simulations without an account. Educators can use an account to keep track of students and simulations. <https://phet.colorado.edu/>



The National Library of Virtual Manipulatives (NLVM) is an NSF supported project that began in 1999 to develop a library of uniquely interactive, web-based virtual manipulatives or concept tutorials, mostly in the form of Java applets, for mathematics instruction (K-12 emphasis). Utah State University team is building Java-based mathematical tools and editors that allow us to create exciting new approaches to interactive mathematical instruction. The use of Java as a programming language provides platform independence and web-based accessibility. The NLVM is a resource from which teachers may freely draw to enrich their mathematics classrooms. <http://bit.ly/2v7j9V4>



Venn Diagram is an online interactive Venn diagram that does not require any user login or account to be used. Platform requires a name typed in only to give a title to the diagram for the purpose to be saved when finished. Diagram can be two or three circles. Users can label the circles and select the colors of each. While Venn Diagrams are not explicitly referenced by the ILS for Mathematics, they can be a useful tool for building conceptual understanding. This applet could be exceptionally effective when engaging in the Conditional Probability and Rules of Probability Standards (S-CP.1-9). <http://bit.ly/2vfSmpu>

Even MORE Resources

To find more resources and the latest up-to-date technology to support technology integration, please visit www.ilclassroomtech.weebly.com.

- ◆ Assessment tools
- ◆ Audio/video tools
- ◆ Content area support
- ◆ Digital portfolios
- ◆ Computer science
- ◆ Learning management systems
- ◆ Mobile apps
- ◆ Research tools
- ◆ Social Emotional Learning
- ◆ Technology terms

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