

# Academic Resources

## ***Class Projects or Homework Assignments***

There is a range of hands-on activities, field trips, and creative homework assignments you can build around a construction math lesson plan. Check out these resources for ideas:

**Host a Lego competition** – Block Kids is a fun, hour-long competition designed by the National Association of Women in Construction to introduce students to construction project planning and design. This is targeted to elementary students, but can be a great team building exercise. Go to NAWIC’s Puget Sound Chapter page for basic instructions at [www.nawicpugetsound.org](http://www.nawicpugetsound.org).

**Check out the *Top 10 Construction Projects of the 20th Century*** – The Associated General Contractors’ national website, [www.constructmyfuture.com](http://www.constructmyfuture.com) offers resources for teachers and activities for students, including history information on large-scale projects that profoundly impacted global development.

**Go Green** – The Seattle-based Homewaters Project offers a range of cool programs for teachers, including Neighborhood Green Mapping, which is a great tool to learn about the sustainable features and problems in your city or neighborhood. <http://www.homewatersproject.org/>. Arizona State University’s website, <http://chainreaction.asu.edu/ecology/tools/>, provides a range of lessons and activities that make critical links between urban planning, sustainability and pollution reduction in construction.

**Zoom into Engineering** – There are fantastic and fun science-based engineering lessons and experiments being used by the AGC Education Foundation and the American Society of Civil Engineers – Younger Member Forum that can be incorporated into classes. You can find these free lessons at: <http://pbskids.org/zoom/grownups/engineering/>

**Attend a construction fair** – Washington Women in Trades hosts a spectacular annual event for students and women called “Women in Trades Fair” each April at Fischer Pavilion at the Seattle Center. There are hands-on projects, demonstrations, activities and contests for a day of fun – go to <http://www.wawomenintrades.com/> for details.

**Attend an industry math conference** – Clover Park Technical College hosts an annual conference connecting math competency to careers. Contact Janet Holm at 253.589.5545 for details. Also, the Washington Applied Math Council offers in-service workshops – check <http://wa-appliedmath.org/> for further details.

**Picture Gallery** – Gather current pictures of constructions workers on the job, or put together a historical gallery showcasing local or even national construction growth. Add a copy of the Governor’s proclamation to your gallery by downloading a copy at [www.rtc.edu/CommunityResources/CCE](http://www.rtc.edu/CommunityResources/CCE).

**Build a House** –The Associated General Contractors of Washington Education Foundation hosts a terrific hands-on awareness activity called “If I Had a Hammer.” Students learn how fundamental math is in construction while building a to-scale house! Go to <http://www.agcwa.com> to arrange for a hosted presentation, or learn how to do it yourself.

**Pizza, Pop and Power Tools** - Host a lunchtime construction career fair for selected students at your school! Sound Transit and other sponsors are bringing together apprenticeships to meet with students over pizza lunch and share construction education information. A template for this activity is available through the Construction Center of Excellence at 425.235.2352, extension 5582.

**Invite an industry speaker to your classroom** - The Construction Center of Excellence has a Speakers’ Bureau of industry and apprenticeship representatives who (upon availability) can give an industry presentation to your classroom or attend a career fair. Call 425.235.2352, extension 5582 for details.

**Mentoring** – Company owners and their workers can volunteer to do one to one mentoring, or class mentoring, helping students stay motivated with learning. Sisters in the Building Trades is putting together a mentor network – go to <http://www.sistersinthebuildingtrades.org/> for more information.

**Neighborhood Watch** – Nearly every community in our state is expanding with residential and commercial projects. Ask kids (with parent help) to locate a nearby project, and in journal-style entries, record its progress towards completion over two weeks. How was the work done? What kinds of academic and technical skills would a construction worker need to build something safely and accurately? Help students learn how to write a sequential report using a construction project as a guide.

**Shoobox Building** – Students of all ages can gain problem-solving skills when given hands-on application. Using a shoebox as the restricted area, ask students to build the interior of a house, or use the space to design a lot, building, or even a park. The project should be designed at scale, so students can relate measurements to livable space.

**Go to Your Room!** – Ask students to measure the dimensions of their bedroom, or another room in their house, and calculate the square footage. If building codes require studs to be in place every 16 inches, how many studs should be in each wall?

**Fold a Building**– the Paperfolding.com website offers a terrific section on using origami in math classes, helping students who learn through activity. <http://www.paperfolding.com/math/>

## Additional Math Resources for Teachers

### FREE ONLINE MATH RESOURCES

These websites offer lessons, assessment tools, games, homework assistance and tips to reduce student anxiety and increase retention for a variety of ages/learning levels.

**SOS Math** offers free online resources (which can be purchased on a CD). <http://www.sosmath.com/>

The **Math Goodies** portal offers free online homework help and a free newsletter for teachers. <http://www.mathgoodies.com>

The **Math Power** website is hosted by a professor who offers tips and assessments to reduce math anxiety and identify math learning styles. <http://www.mathpower.com>

**CoolMath4Students** and **CoolMath4Teachers** offer games, lessons, and activities. <http://www.coolmath.com>

The **Math Facts Practice** site has a list of online math games for students. <http://www2.harlingen.isd.tenet.edu/~CTE/mathfun.htm>

The **Problem Site** link has a series of online math games for students. <http://www.theproblemsite.com/games.asp>

**A+ Math** offers interactive resources for younger students. <http://www.aplusmath.com>

**Ask Dr. Math** is a resource for simply worded explanations to complex problems. <http://mathforum.org/dr.math/>

**Math Archives** is a clearinghouse of math developed by the University of Tennessee at Knoxville. <http://archives.math.utk.edu/>

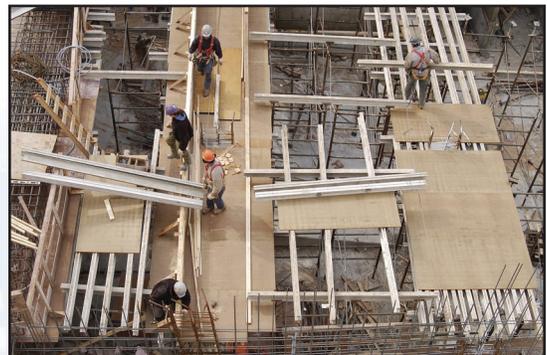
**Wolfram MathWorld** is an encyclopedic resource. <http://mathworld.wolfram.com/>

The **Mathematical Atlas** provides an introduction to the areas of modern mathematics, and points to sources of further information. <http://www.math-atlas.org/>

The **Earliest Uses of Various Mathematical Symbols** web pages show the names of the individuals who first used various common mathematical symbols, and the dates the symbols first appeared. <http://members.aol.com/jeff570/mathsym.html>

**“Cut the Knot”** is an interactive mathematics miscellany and puzzles. <http://www.cut-the-knot.org/index.shtml>

**MathNerds** provides discovery-based, mathematical guidance via an international, volunteer network of mathematicians. <http://www.mathnerds.com/mathnerds/>



**HotMath.org** provides detailed solutions for actual math textbook homework problems in many popular textbooks. <http://hotmath.com/>

The **ExamBot** website features customizable practice exams for Math and Physics. <http://www.exambot.com/>  
The **PinkMath** website is designed to help girls excel at math. It offers academic assessment, tutoring, and information for third through twelfth grade girls. <http://www.pinkmath.com/>

## SUBJECT-MATTER SPECIFIC ONLINE RESOURCES

While there are innumerable websites devoted to specific subject matter, these sites provide applied learning examples.

### ALGEBRA

**Purplemath** has lessons, links, guidelines, and a study-skills survey, all designed to help the high school or college student find success in algebra. <http://www.purplemath.com/>

### CALCULUS

**Calc101.com** provides help with Calculus and Algebra through WebMathematica. <http://www.calc101.com/>  
Graphics for the Calculus Classroom offers graphs at <http://www.sst.ph.ic.ac.uk/angus/Lectures/compphys/>.

### GEOMETRY

**Euclid's Elements** is a complete web edition of one of the most famous Math books, with comments by D.E. Joyce. <http://aleph0.clarku.edu/~djoyce/java/elements/toc.html>

### PROBABILITY/STATISTICS

**PlanetQHE** is an interactive site designed for high school students interested in chance and probability. <http://www.planetqhe.com/>

## ORGANIZATIONS SUPPORTING MATH TEACHERS

The following organizations offer different resources to members.

The **Transition Math Project** is a collaborative of educators working together to help students successfully progress from high school to college math. <http://www.transitionmathproject.org/>

The **Washington Applied Math Council** offers conferences, training and online WASL prep courses. <http://wa-appliedmath.org/>

The **Washington State Math Council** offers a variety of publications, resources, and a teacher exchange. <http://www.wsmc.net>

**American Mathematical Society** <http://e-math.ams.org/>

**National Council of Teachers of Math** <http://www.nctm.org>



The **Women in Math Project** based at the University of Oregon has publications and web links to promote women in the field of mathematics. <http://darkwing.uoregon.edu/~wmmmath/>

The **Math Forum at Drexel** is a clearinghouse of publications, papers and resources for math professionals. <http://www.mathforum.org/>

The **Mathematical Association of America** <http://www.maa.org/>



The **Society for Industrial and Applied Mathematics** <http://www.siam.org/>

The **Mathematical Sciences Research Institute** <http://www.msri.org/>

The **Plus Magazine** is an online mathematics magazine, produced by the Millenium Mathematics Project, based in Cambridge (UK). <http://plus.maths.org.uk/>

Formerly called “Dave’s Math Tables,” the **Math2.org** website features a variety of tables in diverse areas of math, a message board and chat room. <http://math2.org/>

The **C\*ODE\*E Home Page** features past and current issues of the journal edited by the Consortium for Ordinary Differential Equations Experiments. <http://www.math.hmc.edu/codee/>

## MISCELLANEOUS MATHEMATICS RELATED SITES

**History of Mathematics** provides biographies and pictures of mathematicians. <http://www-groups.dcs.st-and.ac.uk/~history/index.html>

**Mathematicians of the Seventeenth and Eighteenth Centuries** features a sizable list of biographies by W. W. Rouse Ball (4th Edition, 1908). <http://www.maths.tcd.ie/pub/HistMath/People/RBallHist.html>

**The R.L. Moore Legacy Project** webpage discusses the work of R.L. Moore, who developed what is today called inquiry- based learning or discovery learning. <http://www.discovery.utexas.edu/rlm/index.html>

**The Abacus Site** is a complete treatment of the abacus: history, usage, with java applets and more. <http://www.ee.ryerson.ca:8080/~elf/abacus/>

**MathMatrix** is a website exploring mathematical recreation. <http://www.math.dartmouth.edu/~leejstem/mathematrix/index.html>

## ***Additional Non-Traditional Career Information for Teachers***

A **Guide to Fair Counseling for Science, Technology, Engineering and Mathematics (STEM)** is a free, downloadable booklet developed by the National Science Foundation funded Counseling for Gender Equity Project. This comprehensive book covers topics including the role of parents, strategies for bias-free counseling, and more. <http://ees.nae.edu/gfb.pdf>

The **National Bureau of Labor Statistics (BLS)** offers a vast website of economic and job information – it also has a career exploration tool just for kids at <http://www.bls.gov/k12/index.htm>. BLS also publishes a “Women in the Labor Force: A Databook (2006 Edition) at <https://owa.rtc.edu/exchweb/bin/redirect.asp?URL=http://www.bls.gov/cps/wlf-databook2006.htm>.

The **Departments of Labor and Education** share a website called Career Voyages <http://www.careervoyages.gov/>, providing many career exploration tools.

The **States’ Career Clusters** explains the 16 identified career clusters and major pathways associated with those clusters. This site is particularly useful for teachers developing course sequencing with post-secondary institutions for articulations. <http://www.careerclusters.org/>

The **Washington State Department of Employment Security** offers a search engine based on the sixteen Career Clusters, showing local data, skill sets, and more. Go to: <http://www.workforceexplorer.com/cgi/dataanalysis/?PAGEID=94&SUBID=153>. While you’re visiting the ESD website, check out their Jobs for the Sidewalk Economist tool for students at: <http://www.workforceexplorer.com/cgi/dataanalysis/?PAGEID=94&SUBID=153>

The **Washington State Workforce Training and Education Coordinating Board** provides considerable research and tools on post-secondary training opportunities. Their Job Training Results website can help students find the training they want at Washington’s colleges. <http://www.wtb.wa.gov/jtr/>

