

# SCI-MATH WORLD

## Interactive Websites for Teachers and Librarians

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**Note: Site no longer being updated (Final Version can be found in PDF form here)**



Sci-Math World is designed for teachers and librarians who wish to expand their knowledge of science & math education Web resources. This Web site contains many resources that today's searchers need, whether they are K-12 or higher education students, educators, or parents. Together, this hands-on class & Web site will provide the tools to locate valuable, reliable information on the ever-changing, rapidly growing Web.

### Selection of Search Tools: The Basic Three

Begin with [Directories and Portals](#) when:

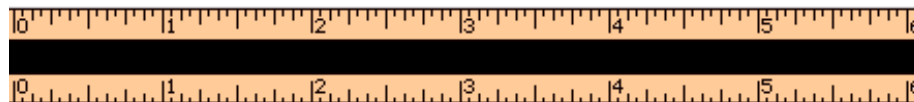
- you have a broad topic
- you want access to selected, evaluated, and annotated collections
- you prefer quality over quantity
- you want to locate Web sites rather than individual pages within these sites

Begin with the [Invisible or Deep Web](#) [searchable sites and databases] when:

- you are looking for information that is likely to be stored in a database
- you are looking for information that is dynamically changing in content

Begin with [Search Engines](#) when:

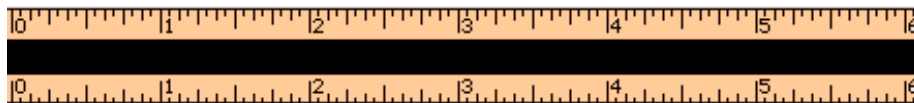
- you have a narrow topic
- you are looking for a specific site
- you want to gather a large number of results
- you want to take advantage of the newer retrieval technologies



### Directories and Portals

- [Librarians' Internet Index \(http://lii.org/\)](http://lii.org/) - *Websites You Can Trust*: LII offers a searchable and browsable collection of over 20,000 quality websites, "maintained by librarians and organized into 14 main topics and nearly 300 related topics," in addition to an excellent weekly newsletter [they have over 40,000 subscribers in many countries], available by email or RSS, of high-quality Websites related to current events, holidays, and popular and important issues. Features include icons following the titles allowing you to view more details, make comments about, or e-mail the site. Of course, LII can also lead you to free Web databases by typing in a broad topic and adding the words: "and databases" (i.e., biology and databases). You can also quickly find sites on Science & Math by clicking onto the "Science" link and choosing from a sub-topic (i.e., Mathematics) on the page or viewing the "General Resources" links.

- [BUBL Information Service](http://publ.ac.uk/) (<http://publ.ac.uk/>) - Offers access to thousands of resources, including full-text articles, mailing lists, etc. The main catalog page lists Dewey Decimal categories of interest, such as *Science and mathematics*, which includes "physics, chemistry, earth sciences, biology, and zoology" links, while the "Subject Menus" link on the main page lists a wide variety of topics from which to choose, such as "genetics" or "neuroscience."
- [Chemdex](http://www.chemdex.org/) (<http://www.chemdex.org/>) - "The directory of chemistry on the Web," Chemdex is featured in the Institute for Scientific Information's premium collection of evaluated scholarly Web sites. There are over 7,208 links here, so this really is *the* starting place for finding chemical sites.
- [EdSelect](http://www.edselect.com/) (<http://www.edselect.com/>) - Collection of sites chosen for classroom use by Ontario teachers. Pat Elliott, a teacher-librarian with Simcoe County District School Board, selected these to match the provincial curriculum. See the curriculum (K-8) on *Science & Technology* and *Mathematics*.
- [InfoMine](http://infomine.ucr.edu) (<http://infomine.ucr.edu>) - This scholarly resource collection includes tens of thousands of sites, grouped into 9 annotated, indexed categories (databases) for easy retrieval. This librarian-built "virtual library of Internet resources [is] relevant to faculty, students, and research staff at the university level," while also very useful for higher-level high school and professionals. Links to *Biological, Agricultural, & Medical Sciences* and *Physical Science, Engineering, Computing, & Math* can be found on the first screen.
- [Internet Public Library](http://www.ipl.org/) (<http://www.ipl.org/>) - Provides sites arranged by academic discipline and access to collections of online periodicals and books. Its unique feature is an interactive reference desk, staffed by librarians. Check out the *Computers, Health, and Science & Tech* Subject Collections.
- [Measure 4 Measure](http://www.wolinskyweb.net/measure.htm) (<http://www.wolinskyweb.net/measure.htm>) - "Collection of interactive Web sites that estimate, calculate, evaluate, and translate" everything from acceleration conversions to Morse Code to word frequencies. Take a look at the *Science/Math* and *Health* categories.
- [SciCentral](http://www.scicentral.com/) (<http://www.scicentral.com/>) - This new streamlined version of SciCentral is an impressive "gateway to the best scientific research news sources," providing selective access to area-specific research news in the Biosciences, Health Sciences, Physics/Chemistry, Earth & Space, and Engineering fields, as well as links to "locate prime research tools and resources"--a great science directory.



## Invisible Web Searchable Sites

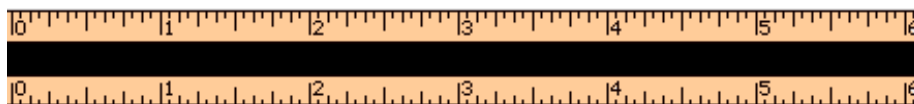
**Note** Chris Sherman states that "vast expanses of the Web are completely invisible to general purpose search engines," but there are ways "to find the hidden gems search engines can't see."

### Some Recommended Links to Invisible Web Databases:

- [Direct Search](http://www.freepint.com/gary/direct.htm) (<http://www.freepint.com/gary/direct.htm>) - Gary Price, MLIS, of *Gary Price Library & Internet Research Consulting*, one of the foremost authorities on invaluable Invisible Web resources, has assembled a massive collection at this site. Visit one of Gary's newest endeavors, his [ResourceShelf](http://www.resourceshelf.com/) (<http://www.resourceshelf.com/>) Weblog & Newsletter, for "Resources and News for Information Professionals."
- [CompletePlanet: The Deep Web Directory](http://www.completeplanet.com/) (<http://www.completeplanet.com/>) - BrightPlanet Corporation's site contains "70,000+ searchable databases & specialty search engines." Check out their [Help/FAQs](http://aip.completeplanet.com/aip-engines/help/index.jsp) tab (<http://aip.completeplanet.com/aip-engines/help/index.jsp>), too.

### Some Invisible Web Databases of Interest to Science & Math Seekers

- [AnimalSearch](http://animalsearch.net/) (<http://animalsearch.net/>) - A database for family-safe animal-related sites, you can also search here by group, type, and geographic regions.
- [Educator's Reference Desk](http://www.eduref.org/) (<http://www.eduref.org/>) - This site contains 2000+ lesson plans, 3000+ links to value-added online education information, and 200+ question archive collected on the award-winning AskERIC site during the past decade. This site also provides access to the ERIC database--the world's largest source of information on education research & practice, including free, full-text expert digest reports, and it also links you to the Gateway to Educational Materials (GEM), which "provides quick and easy access to over 40,000 educational resources found on various federal, state, university, non-profit and commercial Internet sites."
- [HerbMed](http://www.herbmed.org/) (<http://www.herbmed.org/>)- Those interested in medicinal herbs will find that the Alternative Medicine Foundation presents plain English summaries of Medline research article abstracts, as well as links to traditional and folk use reports and pictures of herbs.
- [NatureServe Explorer](http://www.natureserve.org/explorer) (<http://www.natureserve.org/explorer>) - This online encyclopedia provides authoritative "information on more than 70,000 plants, animals, and ecosystems of the United States and Canada. Explorer includes particularly in-depth coverage for rare and endangered species."
- [Nuclear Explosions Database](http://www.ga.gov.au/oracle/nukexp_form.jsp) ([http://www.ga.gov.au/oracle/nukexp\\_form.jsp](http://www.ga.gov.au/oracle/nukexp_form.jsp)) - Geoscience Australia's database provides location, time, & size of explosions worldwide since 1945. Click on "databases" under "Online Tools" to see a list of other searchable online mapping tools & databases.
- [On-Line Encyclopedia of Integer Sequences](http://www.research.att.com/~njas/sequences/) (<http://www.research.att.com/~njas/sequences/>) - Type in a series of numbers and this database will complete the sequence and provide the sequence name, along with its mathematical formula, structure, references, and links.
- [PubMed](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi) (<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>) - Provides access to over 17 million MEDLINE citations, including links to full text articles & related resources. You will also want to explore *PubMed Central (PMC)*, an e-archive of free, full text articles from almost 400 life sciences journals, as well as *Bookshelf*, "a growing collection of [full text] biomedical books (70+) that can be searched directly." They now offer a "new global NCBI 'Entrez' search engine" where you can search across their many life sciences databases, too.
- [Directory of Open Access Journals](http://www.doaj.org/) (<http://www.doaj.org/>) - Launched in May 2003, Sweden's Lund University Libraries Head Office hosts this "one-stop shopping" open access directory, providing no-cost access to the full text of over 3,270 journals, with over 1,060 journals searchable on the article level (over 176,800 articles available)--in the science and humanities/social sciences--and its directory is continually growing in size. Another example of a larger peer-reviewed open access provider for biology and medicine, containing thousands of open access papers from more than more than 150 peer-reviewed open access journals, is [BioMedCentral](http://www.biomedcentral.com/) (<http://www.biomedcentral.com/>).
- [HighWire Press: Free Online Full-text Articles](http://highwire.stanford.edu/) (<http://highwire.stanford.edu/>) - Launched in early 1995, Stanford University Libraries' HighWire Press hosts what it claims to be the "world's largest and fastest growing archive of free full-text life science articles in the world, with over 1.8 million free, full-text articles [almost 1,114 journals are free in some way] online." I like how it also provides very quick full-text access to your institution's journal subscriptions to HighWire-affiliated journals via IP address recognition when using a computer workstation within your library/institution--journals to which you probably did not even know that you had access! (click on "For Institutions" tab on the top and follow the directions). You can also browse by topic or alphabetically on this page--you will be impressed!



## Some Science and Math Search Engines

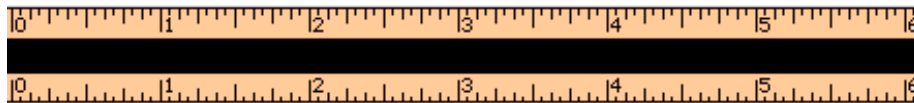
### Note

Science and Math search engines, like those listed below, help you find specific science and math Web resources, so I like to go to them first, but general search engines, such as Google and Yahoo!, are also good. I recommend visiting [Search Engine Watch](http://www.searchenginewatch.com/) (<http://www.searchenginewatch.com/>) to find links to other specialized search engines.

- [BiologyBrowser](http://www.biologybrowser.org) (<http://www.biologybrowser.org>) - this new free website service from BIOSIS enables you to access, for

free, unique high-quality online resources in the life sciences for biologists, while connecting with other like-minded researchers worldwide. Presently, they offer thousands of quality-controlled science links (updated often), an interactive forum for connecting scientists worldwide, an Index to Organism Names verification tool, and a Zoological Record for teachers and students.

- [Cramster](http://www.cramster.com/) (<http://www.cramster.com/>) - This site is a "24/7 Study Community for Math, Physics, Chemistry and Engineering Help." Cramster is a global study community comprised of students and teachers helping each other understand how to solve problems for math and science subjects like Physics, Calculus, Statistics, Chemistry, Mechanical Engineering, Electrical Engineering, Computer Science, etc. Cramster gives students access to various types of study resources like textbook solutions, topic notes, sample problems, and practice exams. These materials are created by Cramster, indexed from the web, or contributed by the members of Cramster. Cramster is an online study group, that promotes social learning through their message board called "[Cramster Answer Board](#) where members ask and answer questions moderated by Cramster Subject Matter Experts." They help students understand how to do their homework and be better prepared for their exams on over 4,000 schools around the world. This site requires you to register for FREE to use these resources.
- [Eric Weisstein's World of Science](http://scienceworld.wolfram.com/) (<http://scienceworld.wolfram.com/>) - This is an award-winning comprehensive and interactive science and mathematics encyclopedia intended for students, educators, math enthusiasts, and researchers. It contains searchable encyclopedias of astronomy, scientific biography, chemistry, and physics, and mathematics (World of Math).
- [Math.com: The World of Math Online](http://www.math.com/) (<http://www.math.com/>) - "Math.com is dedicated to providing revolutionary ways for students, parents, teachers, and everyone to learn math," where you can find free help with homework with their large collection of free math reference resources--elementary and everyday math to algebra and beyond. A great guide for math students and teachers.
- [MathSearch](http://www.maths.usyd.edu.au/MathSearch.html) (<http://www.maths.usyd.edu.au/MathSearch.html>) - Searching for research-level or university mathematical and statistical information? Let your journey take you to MathSearch, a search tool hosted by the University of Sydney School of Mathematics & Statistics. Search more than 200,000 documents on academic English-language mathematics and statistics servers, including full text of some technical reports, working reports, etc.
- [SciNet Science Search](http://www.scinet.cc/) (<http://www.scinet.cc/>) - A specialized search engine & directory for those concerned only with accurate and relevant science, engineering, medicine, and nature information on the Internet.
- [Scirus](http://www.scirus.com/srsapp) (<http://www.scirus.com/srsapp>) - This science search engine, with over 450 million science-specific Web pages, offers excellent advanced search options for a wide variety of information types and sources of materials on the Web, including journals. Scirus has become pretty successful at pinpointing science-specific data, reports, articles, and relevant scholarly Web pages--a considerable recent improvement. Check out their Advanced Search page, as well as their About Us links.
- [UFOSeek: The UFO and Paranormal Search Engine](http://www.ufoseek.com/) (<http://www.ufoseek.com/>) -"Yes, Mulder, the truth is really, um, out there, and you can find it using this paranormal/UFO search engine," currently indexing 57,374 Paranormal, Spiritual and UFO sites in the their system.



## Interactive Science on the Web

### • Interactive Web Sites on Anatomy/Biology

- [National Cancer Institute: Clinical Trials Home Page](http://www.cancer.gov/clinical_trials/) ([http://www.cancer.gov/clinical\\_trials/](http://www.cancer.gov/clinical_trials/)) - Clinical cancer trials allows the health professional or patient to search by diagnosis and limit results by type of cancer, type of treatment (i.e., radiation, chemotherapy, surgery, etc.); trial type (i.e., treatment or supportive care, genetic, screening, etc.); and geographic location. There is also an e-mail notification service. This is brought to us by the National Cancer Institute (NCI). "NCI is a part of the National Institutes of Health, within the U.S. Department of Health and Human Services. This [site and their main] Web site offers free, credible, current, comprehensive

online information about cancer prevention, diagnosis, treatment, statistics, research, clinical trials, and news, as well as links to other NCI Web sites."

- o [CELLS alive!](http://www.cellsalive.com/) (http://www.cellsalive.com/) - High resolution electron microscopy and slick animations demonstrate the mechanics of HIV infection, allergy and mite interactions, how antibodies are made, bacterial motility, ulcer-causing bacteria, how lymphocytes kill infected cells, etc. Video clips require QuickTime or AVI.
- o [HealthyNJ](http://www.healthynj.org/) (http://www.healthynj.org/) - "HealthyNJ is a product of the University Libraries at the University of Medicine and Dentistry of New Jersey. The Consumer Health Information Task Force, comprised of librarians from the four UMDNJ Campus Libraries, developed the content of the Web Site to meet the health care information needs of consumers, particularly the citizens of New Jersey." I find the "Just for Kids" and "Reference Desk" sections particularly relevant and helpful--overall, this is a very user-friendly, informative, and current site.
- o [Howard Hughes Medical Institute: BioInteractive](http://www.hhmi.org/biointeractive/) (http://www.hhmi.org/biointeractive/) - The learning modules at BioInteractive allow you to be the scientist, providing fully interactive biomedical laboratory simulations, including a "bacterial identification lab, a cardiology lab, and a neurophysiology lab." Their virtual labs have won international awards for their use of multimedia on the Internet to educate about science and technology.
- o [Neuroscience for Kids](http://faculty.washington.edu/chudler/neurok.html) (http://faculty.washington.edu/chudler/neurok.html) - Neuroscience for Kids is an interactive Web site dedicated to improving knowledge in the area of the nervous system. It provides interesting tutorials on the brain and the central nervous system along with experiments and activities for all students.

## • Interactive Web Sites on Animals/Insects

- o [Horse Country](http://www.horse-country.com/) (http://www.horse-country.com/) - An excellent site for young adults on all things equine and equestrian, Horse Country features "Cyberbarn" interactive games that introduce kids to science, math, and technology through their interest in horses; pen pal pages; chat; and an e-mail journal maintained by young adults. Includes links to "Vet Rap" and information and photos on the horse in history, sport, art, and science.
- o [Journey North](http://www.learner.org/jnorth/) (http://www.learner.org/jnorth/) - A free online educational service, by the Annenberg Foundation and the Corporation for Public Broadcasting, Journey North "engages students in a global study of wildlife migration and seasonal change" each spring. Students share field observations with classrooms across the North America and scientists "provide expertise directly to the classroom." It also presents challenging questions and online lesson plans for teachers.
- o [Netfrog: The Online Dissection](http://curry.edschool.virginia.edu/go/frog/Frog2/) (http://curry.edschool.virginia.edu/go/frog/Frog2/) - An award-winning interactive site designed to teach high school students the anatomy of a frog and how to dissect it. "Each page explores a step in the frog dissection process, beginning with the materials set up, and concluding with a review and quiz. Each step is illustrated with images and links to additional facts, movies and activities."
- o [The Wonderful World of Insects](http://www.earthlife.net/insects/six.html) (http://www.earthlife.net/insects/six.html) - Search for bugs, learn about basic insect anatomy, find out about the various insect orders, or obtain a care sheet on commonly kept species.

## • Interactive Web Sites on Astronomy

- o [Chandra X-Ray Observatory Center](http://chandra.harvard.edu/edu/index.html) (http://chandra.harvard.edu/edu/index.html) - "A searchable site devoted to the new X-ray space observatory launched into space in 1999. The Field Guide includes information about X-ray astronomy and discusses cosmic X-ray sources such as our sun, black holes, neutron stars, and galaxy clusters." There is also a Resource section for teachers, parents, and children (middle to high school) that includes a glossary, handouts and illustrations, links, and an interactive sky map.
- o [Constellations and their Stars](http://www.astro.wisc.edu/~dolan/constellations/) (http://www.astro.wisc.edu/~dolan/constellations/) - Explains what constellations are, lists stars and constellations alphabetically, by month, and by catalog number. Also includes interactive star charts, a bibliography of star myths from various cultures, and a brief explanation of the myths behind the names of constellations. The author, Chris Dolan, is a graduate student in astronomy at the University of Wisconsin.

## • Interactive Web Sites on Botany/Nutrition

- o [Nutrition Center](http://www.martindalecenter.com/Nutrition.html) (http://www.martindalecenter.com/Nutrition.html) - Part of Martindale's "Virtual Medical

Center" library, this site lists an enormous number of nutrition resources organized under the following sections: Nutrition Journals; Nutrition Overview (dictionaries, calculators, etc.); Interactive Databases, Courses, & Tutorials; Cooking Tools Demonstrations & Recipes; Beverages; and general Nutrition Resources. Everything is on one page and it has a lot of valuable extraneous material.

- o [VegSource Interactive](http://www.vegsource.com/) (http://www.vegsource.com/) - "The mission of VegSource is to offer the most up to date health and diet information possible, and to encourage the many good reasons for a plant-based diet." They provide "24-hour-a-day support via discussion boards, live chats, and e-mail" to help those interested in beginning or maintaining a vegetarian or vegan lifestyle.

## • Interactive Web Sites on Chemistry

- o [General Chemistry Online](http://antoine.frostburg.edu/chem/senese/101/index.shtml) (http://antoine.frostburg.edu/chem/senese/101/index.shtml) - "An introductory, searchable guide to chemistry that includes hyperlinked notes and guides for first semester chemistry, as well as articles. There is also a searchable glossary of over 1,000 terms, over 400 FAQs and a trivia quiz. The Toolbox provides interactive graphing, a pop-up periodic table, and water/gas calculators. Additionally, Tutorials contains self-guided tutorials, quizzes, and drills on specific topics. There is also a database of 800 common compound names, formulas, structures, and properties."
- o [Chemistry.org](https://portal.acs.org/portal/acs/corg/memberapp) (https://portal.acs.org/portal/acs/corg/memberapp) - This chemistry site from the American Chemical Society (ACS) provides valuable information for chemistry professionals, educators, and students at all levels. It also provides access to ACS print publications, chemistry news, jobs, lesson plans, "Molecule of the Week," and an interactive periodic table. Check out the "Educators & Students" tab, with its K-8 (including "WonderNet" for elementary school kids), high school, and college & graduate sections for more activities.

## • Interactive Web Sites on Environment

- o [Planet Earth Guide](http://dsc.discovery.com/guides/planetearth/planetearth.html) (http://dsc.discovery.com/guides/planetearth/planetearth.html) - "Up-to-date information on any kind of disaster you can think of happening throughout the world this week: temperature extremes; oil spills; earthquakes; wildfires; endangered birds, whales, and land animals; floods; landslides; tornadoes; volcanoes; pollution; cyclones; toxins; diseases; heat; rain; hail; & insects. Links to interactive Amazing Earth Games, where YOU control the forces of nature: Crumble California, Launch a Solar Flare at Earth, and more. From The Discovery Channel."
- o [Virtual Courseware for Earth and Environmental Sciences](http://www.sciencecourseware.com/) (http://www.sciencecourseware.com/) - This project site, a collaboration of natural science faculty members and support staff at California State University, Los Angeles, develops Web-based lab activities that enhance the learning and teaching of Earth and Environmental Science topics for introductory college and high school courses. Virtual labs found at this site "are interactive where students learn by 'doing' and not just clicking and viewing;" Virtual Earthquake, River, Dating (geologic time), Global Warming, and more!
- o [The Weather Channel](http://www.weather.com/) (http://www.weather.com/) - For twenty-two years, The Weather Channel has brought timely weather info to the World. Now, you can interact with them on the Web to receive "current conditions and forecasts for cities World wide, along with local and regional radars." They also provide weather-related news, a weather glossary, a storm encyclopedia, and teacher resources and message boards to talk to others about the "science of meteorology."

## • Interactive Web Sites on Genetics

- o [Gene Almanac](http://www.dnalc.org/home.html) (http://www.dnalc.org/home.html) - This site provides DNA from the Beginning, "an animated primer on the basics of DNA and heredity." The Resources section offers Bioservers, which allow for ... the use of computers to solve biological problems; Your Genes, Your Health--an encyclopedia of genetic disorders; the Biology Animation Library covering DNA concepts; and Nucleotide Sequences, complete nucleotide sequences for a set of plasmids. Requires RealPlayer and Shockwave.
- o [Human Genome Project Information \(HGMI\)](http://www.ornl.gov/sci/techresources/Human_Genome/home.shtml) (http://www.ornl.gov/sci/techresources/Human\_Genome/home.shtml) - HGMI is an award-winning site of the U.S. Department of Energy. Its purpose is to disseminate "information about the U.S. and worldwide Human Genome Projects," and it "offers a wealth of general research information on genetics and bioethics." The "About HGP" link will lead to yet more links, including a "Genetics 101" introduction, a glossary of terms, a list of acronyms, a FAQ section, and an extensive list of links to other genome

web pages, including an "Ethical, Legal, Social Issues" section with links to journal articles on court actions.

## • Interactive Web Sites on Marine Sciences

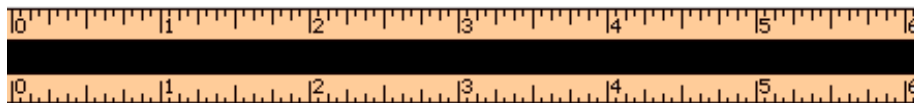
- [OceanLink - An Interactive Information Page for the Marine Sciences](http://oceanlink.island.net/) (http://oceanlink.island.net/) - OceanLink is a marine science information page sponsored by the Bamfield Marine Station in British Columbia. Ocean Link is committed to marine education including career profiles, ocean info pages, and an ocean news learning resource package. Check out the *Ask a Scientist* section to contact a marine scientist.
- [WINDandSEA: The Oceanic and Atmospheric Sciences Internet Locator](http://www.lib.noaa.gov/docs/windandsea.html) (http://www.lib.noaa.gov/docs/windandsea.html) - This site has over 1,000 reviewed and annotated links to science and policy sites, organized by topic. The "Current Topics" and "The Teachers' and Students' Corner" section have links to many National Oceanic and Atmospheric Administration (NOAA) Library sites and other educational and science sites.

## • Interactive Web Sites on Physical Sciences/General

- [Automotive Learning On-line](http://www.innerauto.com/) (http://www.innerauto.com/) - An interactive and educational view of the automobile using Java applets. This program contains over one hundred illustrations of the automobile with graphics, animations, and thousands of descriptive links. Searchable through a keyword search feature, or image, animation, and text.
- [Bill Nye The Science Guy](http://www.billnye.com/flash.html) (http://www.billnye.com/flash.html) - Get the Demo of the Day, science news, TV episode guides, suggested readings, and many other science goodies, all straight from The Science Guy himself!
- [The Internet Public Library's A Science Fair Project Resource Guide](http://www.ipl.org/div/kidspace/projectguide/) (http://www.ipl.org/div/kidspace/projectguide/) - Need to enter a science fair or do a science experiment? This site has a ton of them to explore and will guide you to a variety of Web sites, "leading you through the necessary steps to successfully complete a science experiment."

## • Interactive Web Sites on Physics

- [Internet Plasma Physics Education Experience](http://ippex.pppl.gov/) (http://ippex.pppl.gov/) - Interactive pages on matter, fusion, electricity, magnetism, and energy. There is also a fusion reactor and questions can be e-mailed to **Ask a Physicist**. The site's goal is to get students excited about science. Requires Shockwave and Java. For advanced middle school students and higher.
- [Physics 2000](http://www.Colorado.edu/physics/2000/index.pl) (http://www.Colorado.edu/physics/2000/index.pl) - An informative and fun introduction to various aspects of physics using Java applets that allow learning through interaction. Some of the applets will be quite slow to load with a slower modem. From the Chemistry & Physics Dept. at the University of Colorado.
- [Visual Quantum Mechanics](http://phys.educ.ksu.edu/) (http://phys.educ.ksu.edu/) - Designed to "introduce quantum physics to high school and college students who do not have a background in modern physics or higher level math." Utilizing Shockwave, "interactive computer visualizations and animations provide graphical descriptions of quantum effects." Properties of light emitting diodes, solar cells, and even glow-in-the-dark toothbrushes are explored.



## Interactive Math on the Web

### • Interactive Web Sites on Algebra/Geometry/Higher Math

- [Algebra 1: Graphing Linear Equations](http://www.terragon.com/tkobrien/algebra/) (http://www.terragon.com/tkobrien/algebra/) - PC users (no Macs) can graph linear equations at this site. Enter a function, click on the check box next to the edit field, and the graph will be plotted for you. You can also reset domain, range, and variable parameters. The site includes helpful plotter instructions, some practice problems, and very good linear equation explanations arranged under topics.

- o [Manipula Math with Java](http://www.ies.co.jp/math/java/) (<http://www.ies.co.jp/math/java/>) - Interactive mathematics programs designed for those who are interested in mathematics including middle school, high school, and college students. One will find interactive programs that can be manipulated and a lot of animation that helps to grasp the meaning of mathematical ideas, including those of geometry, calculus, algebra, trigonometry, and others.
- o [WWW Interactive Mathematics Server \(WIMS\)](http://wims.unice.fr/) (<http://wims.unice.fr/>) - This site presents college level interactive mathematical problems. Input an answer and get the result. There are elementary and "more advanced" modes.

## • Interactive Web Sites on Math Brain Teasers/Games

- o [AAA Math](http://www.aaamath.com/index.html) (<http://www.aaamath.com/index.html>) - This highly recommended math site illustrates and provides interactive arithmetic exercises and problems for grades K-8. It contains a series of basic math skills lessons, solid explanations, and challenging interactive games and problem sets. This is a much needed resource for formal elementary math classes and homeschooling sessions that are a resource that can be used by math students in formal elementary education math classes, tutoring, and home schooling.
- o [Brain Teasers](http://www.eduplace.com/math/brain/) (<http://www.eduplace.com/math/brain/>)- Thanks to Houghton Mifflin, you can join forces with classmates, go to this site, and solve one of these mind bogglingers. Each Wednesday evening they post a new Brain Teaser for each grade level range: 3-4, 5-6, & 7-8. They post solutions one week later.
- o [Getsmarter.org](http://www.getsmarter.org/index.cfm) (<http://www.getsmarter.org/index.cfm>) - This is a great "animated and interactive testing and learning site where students can compare their performance in math, and science, with other elementary, middle, and high school students worldwide. You can also "access learning hints and links to help you Get Smarter!" This site requires Flash, and it is a "free, no-risk, publicly available" Website geared to "help stimulate improvements in K-12 math and science education," providing kids with information on exciting careers that use math and science. Getsmarter.org has merged with GetTech.org, whose mission is "to help you prepare students (in fun ways) for tomorrow's great jobs." The two sites have come together to promote the knowledge knowledge of mathematics and science while providing "a gateway to individual opportunity and national prosperity. Our nation's technical talent pool is its most precious economic asset—the key to generating high-wage jobs, addressing domestic social issues and competing internationally."
- o [Interactive Mathematics Miscellany and Puzzles](http://www.cut-the-knot.org/content.shtml) (<http://www.cut-the-knot.org/content.shtml>) - A wonderland of *puzzles* & problems presented by a scholar in love with the language of math. Hundreds of games and *brain teasers* illustrate algebraic & geometric theories. Links in the glossary provide examples of usage.
- o [Math Baseball](http://www.funbrain.com/math/index.html) (<http://www.funbrain.com/math/index.html>) - FunBrain.com, an award-winning interactive learning and "edutainment Web site" links K-8 children, parents, and teachers together with its fun math baseball game that you can play by yourself or with friends. It gives you a choice of math problems and the level you want to practice. Click on the Games icon for other games available through their site, some going up to grade 12, age seventeen.
- o [Room 108 Math](http://www.netrover.com/~kingskid/Math/math.htm) (<http://www.netrover.com/~kingskid/Math/math.htm>) - This site shows math with visual and sound effects, and students get Audio Feedback on their answers. It teaches adding, multiplying, dividing, etc., as well as the use of calculators, using sound effects. Check out the stories, crossword puzzles, spellings, and other activities there for elementary school-use.

## • Interactive Web Sites on Numbers, Generally Speaking

- o [About Today's Date](http://richardphillips.org.uk/number/) (<http://richardphillips.org.uk/number/>) - Learn all about the numbers in today's date (based on the book originally published by Cambridge University Press in 1994, this second edition (2004) of [Numbers: Facts, Figures and Fiction](#) is now published by Badsey Publications, written by Richard Phillips).
- o [Beat the Calculator!](http://mathforum.org/k12/mathtips/beatcalc.html) (<http://mathforum.org/k12/mathtips/beatcalc.html>) - Check out this site to learn how to do mental math *fast!* Tips for adding, subtracting, multiplying, dividing, and squaring numbers are given, as well as finding percentages.
- o [Decimal to Roman Numeral Converter](http://home.hiwaay.net/~lkseitz/math/roman/) (<http://home.hiwaay.net/~lkseitz/math/roman/>) - Provides the Roman numeral equivalent of any decimal number from 1 to 3999. View the last ten most popular requests.

- o [Dr. Math: Elementary, Middle, High School, College Level, and Beyond](http://mathforum.org/dr.math/) (http://mathforum.org/dr.math/)- Doctor Math knows just about everything there is to know about math. Browse this site and look at some of the question Dr. Math has answered. Then come up with a math question of your own and submit it!
- o [Online Mathematics Dictionary](http://mathpropress.com/glossary/glossary.html) (http://mathpropress.com/glossary/glossary.html)- Enter the math terminology zone, brought to you by MathPro Press.
- o [XE.com: Universal Currency Converter](http://www.xe.net/ucc/) (http://www.xe.net/ucc/) - Updated daily. 85 major currencies plus gold, silver, palladium, and platinum prices. In addition, their Interactive Currency Table Converter allows you to create foreign exchange rate tables based on the currency of your choice, using live currency rates. "For ease of use, the top ten currencies sorted by popularity are listed first. Next come the top 85 currencies sorted by country name. Special units and precious metals are listed both alphabetically as well as in their own sections at the end of this list. If you need more currencies, you can get every world currency through the XE.com [Full Universal Currency Converter](#)."

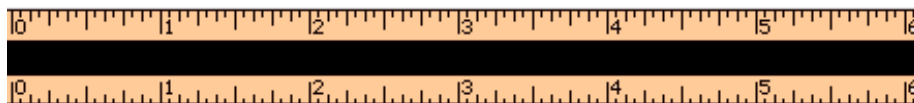
## • Interactive Web Sites on Story/Word Problems

- o [Welcome To Hotel Infinity](http://www.c3.lanl.gov/mega-math/workbk/infinity/infinity.html) (http://www.c3.lanl.gov/mega-math/workbk/infinity/infinity.html) - This intriguing story problem was created by Nancy Casey and brought to you by the folks at MegaMathematics! Click on their graphic for more math games and problems.
- o [Word Problems For Kids](http://www.stfx.ca/special/mathproblems/welcome.html) (http://www.stfx.ca/special/mathproblems/welcome.html) - There are many wonderful problems for teachers & students to explore here, all grouped and labeled by grade level, 5-12.

### Note

FYI: Below are a few of my recent science and/or math articles (and education-related topics) for your review; other articles and presentations can be found at my [Robert J. Lackie's Selected Online Materials](http://www.robertlackie.com/rlackiepub.html) (http://www.robertlackie.com/rlackiepub.html) page:

- Lackie, Robert J. "[The Changing Face of the Scholarly Web: Finding Free, Quality, Full-Text Articles, Books, and More!](#)" *MultiMedia & Internet@Schools: The Media and Technology Specialists' Guide to Electronic Tools and Resources for K-12* 13.4 (2006): 8-12. (PDF article). Note: An HTML full text version of the article is available via the [MMISchools.com](http://www.MMISchools.com) Website.
- Lackie, Robert J., and Robert J. Congleton. "[Free and Fee-Based Online Science Resources for the K-12 Community](#)." *MultiMedia & Internet@Schools: The Media and Technology Specialists' Guide to Electronic Tools and Resources for K-12* 11.6 (2004): 10-16. (PDF article). Note: An HTML full text version of the article is available via the [MMISchools.com](http://www.MMISchools.com) Website.
- Lackie, Robert J. "Internet@Schools: [Finding Free Educational Resources for Teachers & Librarians](#)." *Internet Librarian 2004: Collected Presentations, Monterey, CA, 15-17 Nov. 2004*. Comp. Carol Nixon and Jennifer Burmood. Medford: Information Today, 2004. 296-302. (PDF article and PowerPoint).
- Lackie, Robert J. "[The Evolving 'Invisible Web': Tried-and-True Methods and New Developments for Locating the Web's Hidden Content](#)." *College & Undergraduate Libraries* 10.2 (2003): 65-71. (PDF article).
- Lackie, Robert J. "[Science and Math Web Resources for the Higher Education Community](#)." *Online: The Leading Magazine for Information Professionals* 27.6 (2003): 35-39. (PDF article).



Send comments, suggestions, or questions about this workshop and/or Web site to [Robert J. Lackie](mailto:Robert.J.Lackie@rider.edu) (rlackie@rider.edu), including if you would like permission to link to the [Sci-Math World: An Interactive Web Workshop for Teachers and Librarians](http://www.robertlackie.com/sci/index.html) (http://www.robertlackie.com/sci/index.html).



The *Sci-Math World* site was selected in August 2001 for inclusion in *Librarians' Internet Index*, a searchable, annotated subject directory of over 20,000 Internet resources selected and evaluated by librarians. Click on their logo to search this reliable & efficient guide to Internet resources.

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*Sci-Math World* is designed and implemented by Robert J. Lackie, Associate Professor-Librarian at Rider University, Lawrenceville, New Jersey, where he co-leads the Franklin F. Moore Library's Instruction Program and serves as Library Liaison to the Biology, Chemistry & Physics, Mathematics, Teacher Education, and Graduate Education & Human Services Departments. He received his Master of Library and Information Science at the University of South Carolina and his Master of Arts in Curriculum, Instruction, & Supervision at Rider University. In April 2004, he was selected by the [New Jersey Library Association](#) as the [2004 Librarian of the Year](#), and in May 2004, he was chosen as a recipient of the [2004 Rider University Award for Distinguished Teaching](#). In 2005, he was honored to be selected for inclusion in the 60th Diamond Anniversary (2006) Edition of [Who's Who in America](#), and in June 2006, he received the American Library Association's [2006 Ken Haycock Award for Promoting Librarianship](#). (Click [here](#) for detailed information on [Robert J. Lackie's](#) seminars/workshops, curriculum vitae, short biography, selected publications/presentations, etc.).

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