Math Goodies
(Website Review)

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Site URL:
http://www.mathgoodies.com/

Site Title:
Math Goodies

I. Objective of the site:
Mathgoodies.com promises to deliver "a problem-solving approach" to online Math instruction that will "actively engage" "teachers, students, parents, and homeschoolers." The site is rich in information and the instructional software is worth exploring, but you should know that the content is really aimed at selected number of middle school and high school level topics. The site makes this clear, but not at the top level.

Mathgoodies is constantly evolving. You can expect new features to be added regularly and often. In an age where freshness is difficult to sustain over time, and where a website can stagnate in a matter of weeks, mathgoodies.com has apparently allocated enough resources to keep the site constantly re-vitalized. In 3 consecutive visits over 3 consecutive days, I noticed many files were moved, modified or removed. In fact, I wonder about how many of my observations here in this review have already been rendered moot due to these frequent changes. Such change is a positive sign of the willingness to develop and self-improve, and I applaud their efforts in this regard.

Mathgoodies is a commercial site, but it also offers many free usable tools and resources (gift economy is essential to the success of any website and this is a lesson that many commercial sites have still not yet learned). Mathgoodies also offers many fairly unobtrusive opportunities to purchase commercial products in CD format.

IIa. Contents: Preamble
The site is structured more or less as I have outlined below. I have briefly annotated each of the links for your convenience, and further below I have annotated a few of them more fully. Apart from the Search and Homeroom links, there are between 22 and 28 other links, depending on the submenu in which you find yourself. This confusing discrepancy is discussed in more detail below.

IIb. Contents: Overview
The site is structured as follows with these hyperlinks.
- Lessons (practice exercises in what's called "The Lesson Library")
- MathChat (a synchronous math problem discussion forum)
- Homework (Homework help from an instructor)
- Tell a Friend (automatically sends a notification about this site to friends of your choosing)
- Puzzles (math-related crossword puzzles; some recent trends show literacy is numeracy go hand-in-hand)
- Newsletter (mainly promotes mathgoodies own resources, but occasionally does point to other textbook and internet resources)
- Advertise (recruits commercial support, but also attempts to educate advertisers on netiquette)
- Homeschool (contains several different types of information, including material on state education laws, support groups, and suggestions for educational activities). Don't confuse this with the Homeroom link!
- Survey (online questionnaire for suggested improvements)
Download (purchase Mac or PC CD-Rom versions of software for $59 ($US) so that you do not need an internet connection to run the software; also offers a site license that permits an institution to put these programs on their own server)

Bookstore (partnered with www.amazon.com; this hyperlink ports out to an amazon.com-like area)

About Us (company advertising policy and history)

Awards (self-evident. Testimonials are a nice idea, but a site should stand or fall based on each client's own assessment). The "Awards " area looks a little too much like the Press link – is this similarity deliberate or by accident?

What's New (keeps you updated on this site's changes, which is a good idea, but there are JavaScripts out there that can automatically redirect the browser to those files recently modified. Mathgoodies may be reluctant to use these routines given their privacy policy (see below))

Assistance (Math and other FAQ's center); what's particularly annoying is that help identical file is called "FAQ" under the Press subdirectory, but called "Assistance" under the Lessons directory; this just confused me and I do not understand why this was done. Redundancy is valuable in navigation, but I don’t understand this.

Calculators (6 different kinds of online calculators)

Tutoring (currently under development, but soon parents will be able to pay for the online, routinely-scheduled tutoring of their children)

Images (a Math images library, including special characters, graphs, fractions, etc)

Privacy (Privacy-confidentiality statement; this seems to be a major issue for Mathgoodies when it is such a moot point in so many other ways)

Press (media write-ups – this looks suspiciously like the awards link)

Ed Links (the obligatory list of external, valuable resources such as software, software review sites, teacher resources)

Articles (tips for parents and teachers; I am confused here, and I wonder why – and how -- this is distinct from assistance and the newsletter )

Software (x4 items, including graphing calculator, worksheet creator, math notation plugin for word processors. This link is confusing because it seems to have a similar function similar to the "Download" link)

IIc. Contents: Selected Details

Lessons:

The Math Lessons area (also called the "lesson library") is designed for students between grades 5 through 8, although younger students can use it too, as can older students who are in need of remedial Math. This resource may also be useful for teachers and parents who want to help their children at home. The Lessons are:

1. Circumference & area of circles
2. Topics in Pre-Algebra (Exponents & Integers)
3. Probability
4. Integers (adding, subtracting, multiplying, dividing, operations, absolute values, rules for operations)
5. Understanding Per Cent
6. Number Theory (whole numbers, remainders, quotients, prime numbers, factors, exponents)
7. Circumference & area of Circles
8. Perimeters and area of Polygons

These lessons include explanations of concepts, examples, exercises and challenge exercises for the very brave. This particular component is very well designed, and illustrates the principles of contextualization and layering in which the client has an opportunity to self-diagnose and engage the content at a customized level. This kind of engagement can minimize passivity and encourage activity because the client (student) is empowered.

Homework:

This asynchronous conference area is another kind of help-feature that provides informal, individualized instructor intervention to any student who submits a question.
This feature may cause some concern to teachers and parents who are worried about the integrity and value of these kinds of student resources, but the answers could also easily be obtained in any number of other ways, though perhaps not as specifically and as quickly.

I looked briefly at some of the postings and answers in this section, and I was not surprised to find requests asking for "the answer" and to "solve this." It is clear that the educational consultants at Mathgoodies are very aware of the limitations and dangers of quick-fix answers, and have responded well to the challenge.

Products (under the "Software" link):

This section includes a product called Math Type that embeds Mathematical notation in word processing documents, presentations and WWW pages. It will be interesting to see how this works alongside the new HTML standards that will include Mathematical symbols. A Graph Calculator (Gus and Gertie's Graphin' Gadget), Intelligent Tutor (uses graphics and animations to illustrate concept and is also available in a network version). I do not know how this compares to other programs out there; Worksheet Factory (a parent or teacher tool that permits the creating on practice worksheets in addition, subtraction multiplication, and division).

Calculators:

The calculators section contains very basic, generic JavaScripts that are available in many places. The random number generators work fine, but there is a missed opportunity to capitalize on contextualization. What a great opportunity to show students how randomness is generated in computers! It would be appropriate in this context, to talk about the use of modulus and system clock settings in computer-generated randomness.

It is interesting to observe that the term "calculators" has now taken on many new meanings across the Internet, and on some sites includes calculating everything from life-expectancy based on age and sex, to calculating bra sizes. Mathgoodies uses the term in a conventional sense.

Privacy:

Privacy is a big issue for Mathgoodies because so many children are using the site; I suspect that they are worried about unsavoury and sinister adults surreptitiously harvesting information about innocent children. Mathgoodies is to be commended for this conscientious effort. However, I worry that in the process of stating so clearly and so often that privacy is respected here, one might easily forget that a respect for privacy is not synonymous with confidentiality or anonymity – neither of which can be promised by anyone on the Internet. Every activity on the Internet is a public action and as such, could easily be susceptible to scrutiny and misuse.

III. Technical Aspects:

A frames-like feel has been created by the extensive use of tables. This layout method avoids the notorious bookmarking problems with frames, and still manages to create a frame-like ambience with all of the navigational benefits. Well done!

Red hyperlinks on blue background are distracting and hard to read for this reader's 48-year-old eyes; perhaps for younger eyes this color combination is just fine, but it bothered me. It just doesn't work because there is not enough contrast between background and foreground.

The re-sellers link (resellers.htm) did not load into Netscape 4.5 although it did load easily into MSIE 4.0 and 5.0. When I returned to look for this file 5 days after my first visit, I could not find it. I do not know if its absence is permanent or temporary.

IV. Interface Related Aspects:

It is confusing (initially at least) to have two navigational bars on this site, one the left and one on the right side of the content. The link to "images" on the right hand side is initially confusing until after you have clicked on it and then you become aware that "images" really refers to everything from geometrical shapes to dollar signs and fractions. On first time through I am wondering why SOME of these are here. On the other hand, given the
large number of links, this arrangement is still effective, once you get used to how the site works (this takes 1 or 2 visits).

V. Summary and General Remarks:
Mathgoodies is the most complex Math resource that I have encountered on the WWW. This richness is both a blessing and a curse; there is so much material here and it is sometimes difficult to locate what you need as quickly as one could on comparable sites. All of the "other" Math-help websites that I investigated for the sake of comparison are simpler in layout than Mathgoodies, and they tend to locate specific Math topics at the top level of the site. The Math topics here, are one, or even two levels down. In all fairness, however, Mathgoodies also has by far, more features and offerings than any other related site I was able to find.

To some extent, the speed of navigation and access might be improved by re-thinking the informational layering at Mathgoodies; nevertheless, the site is still well-structured. I am reminded, yet again, that information ordering and structuring are skills that we will all need as WWW expertise and sophistication increase. It is difficult to imagine how one could have this kind of complexity and richness with the same simplicity of navigation that occurs on other Math resource sites.

Many of the other related sites focus on all kinds of math problems, right from basics and everyday topics, up through to university-level problems. Mathgoodies seems to be targeted toward a niche (grades 4-8) and I think that for this reason also, this is a much-needed resource.

This is a website that MUST be book-marked if you are a teacher, student, or parent. The few negatives of the site (some confusing navigation, some difficult color combinations, and some missed opportunities to contextualize various kinds of information) are outweighed by the positives. Mathgoodies permits students to educate themselves through a great variety of methods, and ultimately, through the method that works best for them: by example, through theory, by exercise, or through entertainment. The site's gift economy has great value and the site is always fresh. Bravo!