Facebook, Twitter, and Other Social Media—Teaching Tools? Really?

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Welcome to *Facebook, Twitter, and Other Social Media—Teaching Tools? Really?*

Your students already use social media – text messaging, chat, Facebook, and who knows what else? All teachers want to be able to reach all of their students in the most effective ways possible, so why not use methods they're already comfortable with? This session will introduce you to some of these avenues of "social media". We'll look at some of the best ones for math teachers, most of which are free, but all are valuable ways to communicate with and teach your students.

This is not a session about how to use MathType, but if you use MathType and need help in the future, the following sources are available:

- ✓ **MathType Help** – Both Equation Editor and MathType have extensive help files. In fact, the entire content of the MathType User Manual is now incorporated into MathType Help (MathType version 6 and later).

- ✓ **"Math Anywhere and Everywhere"** – We have additional help on our website for using MathType with many other applications and websites: **www.dessci.com/interop**

- ✓ **Tips & Tricks** – This is the newest feature of our website: *MathType Tips & Tricks*. Periodically we post new tips that help you get the best use out of MathType and save time in the process: **www.dessci.com/tips**

- ✓ **Handouts** – Whenever I present a session like this one at a conference, I post my handout on our web site for a year. You can access this handout and others at **www.dessci.com/handouts**

- ✓ **Technical Support** – We provide lifetime technical support for MathType. For technical support:

  - ➢ Phone: 562-432-2920

  - ➢ Email: **support@dessci.com**. Please provide your MathType Product Key when you write. You can find your Product Key by clicking "About MathType" in the MathType Help menu.

  - ➢ Web: **www.dessci.com** (click one of the Support links). A collection of "support notices" at the site covers most topics for both Equation Editor and MathType.

Bob Mathews
Director of Training

Technology…

Technology can be a great way to enhance or augment your lesson, but it's not a substitute for you. The point to this session is that **you can reach many students electronically simply because you have their attention**. Many of them will get involved writing for the class blog, or answering homework questions, that wouldn't otherwise spend much time on math outside of class.

"When will we ever have to use this?"

Surely your students never ask you this. Of course they do, and you may get tired of hearing it, but it's a valid question. The question is just as valid for the topic of this session. You can also ask yourself *"Why does it matter to my students?"*

Whatever the answers to those questions, you don't want your message to look or sound like Charlie Brown's teacher. That's what some people hear when we start using words like "summation", "square root", "variance", "future value", "standard deviation", etc. "We all use math every day" is a slogan made popular by a television show, but it's fairly accurate. Since we all use math, it's not that great of a leap to hone the skill of *communicating* math.

What is Social Media?

Wikipedia gives a fairly complicated definition of social media, but for our purposes, consider that *social* implies two-way interaction, so included in *social media* is any medium of communication that allows interaction. Television, for example, would not be considered social media, but a homework help forum on the internet would be.

Social media are also examples of **Web 2.0**. Like social media, Web 2.0 apps all have some sort of interaction capability between participants.

Why is Web 2.0 important to me as a math teacher?

For the simple reason that it's important to your students. Since most of them adapt to it very readily, and like to interact with their friends this way, many teachers are seeing a great deal of success by using these means of communicating with their students.

We'll be looking at…

…these forms of social media, with the thought "How can I use this in teaching math?"

- Blogs
- Wikis
- Twitter
- Facebook
- Email

Blogs

The word *blog* is taken from the words *web log*, but is more than a simple diary hosted on the internet. There are dozens of blog hosts to choose from, but for ease of use, features, & adaptability to use by math teachers, I recommend **wordpress.com** (see Appendix 1, page 8).

Uses for a blog

- "scribe blogging"
- explanation of concepts
- embed PowerPoint or other slides & notes from class
- announcements
- practice problems

We'll see how to get math into a blog in a later section.

Wikis

A wiki is more of a "total website" than a blog is, though either can be used in place of a typical class website. Wikis are more adaptable to class collaboration because they're designed precisely *for* collaboration. You're probably familiar with Wikipedia, and the fact that anyone can sign in to Wikipedia and edit a page. Of course, such edits are very closely monitored by other editors, so things like incorrect information, blatant commercial advertising, etc. are removed nearly immediately.

Like blogs, there are numerous wiki hosts from which to choose; I recommend Zoho: **wiki.zoho.com**.

Strategies for using a wiki in mathematics teaching:
(from the article *Using Wikis in Math Classes* – see Appendix 1 for URL of article)

- Problem solving
- "Real world math"
- Problems of the week
- Glossary of mathematical terms
- Collaborate with other schools
- Visual arts
- Case studies

Twitter

Originally intended for people to post answers to the question "What am I doing" in 140 characters or less, but has evolved into much more than that. Not the best tool for math updates because it's difficult to use mathematical notation. It is useful for announcements to students, especially if you use hashtags (e.g., #ACHS, #NCTMDEN10, etc.). Hashtags begin with the # symbol and are useful for returning targeted results from a search. "Short URL" services, such as bit.ly help keep to the 140-character limit by shortening URLs to 20 characters or less.

For a good, brief video introduction to Twitter (2½ minutes), check out Common Craft: http://www.commoncraft.com/twitter

Facebook

Most everyone's familiar with Facebook, but in case you're not, it's the equivalent of a cocktail hour, where you may now & then associate with people you've never met, but mostly you hang out with your friends. You can post "status updates" to let others know what you're doing, what you're thinking, where you're going, or just about anything else you want. You can post videos and photos, join groups, join fan pages, put things on the calendar, and on & on. Privacy is a concern, but if you're careful, you don't really need to worry about it.

Facebook is not very good for communicating math...

…but there are still some very good ways a math teacher can use it. **One of the best ways** to use Facebook for your class is to start a Facebook "group" for your class. Students in the class can join the group and "write on the wall" on the group's page. You are automatically an "admin" when you create the group, but you can appoint others as admins, and can even rotate this duty among the class whenever you want to switch admins. ***YOU*** have total control over who joins the group and what they can post to the group's wall.

Email

There are any number of reasons why you may not want your students emailing you, and vice versa, but there are probably just as many reasons why you *would* want to use email – only you can decide. Assuming for the moment that you think it's a good idea, MathType makes it very easy to include math notation in these email clients:

- Gmail
- Hotmail
- Outlook
- Eudora
- Thunderbird
- Outlook Express
- Windows Live Mail
- Windows Mail
- Yahoo Mail

If your school has a site license for MathType, the license allows students to use it as well (home computers, laptops, etc.).

Getting math into Web 2.0 apps and other websites

Many software and Web 2.0 apps already have a translator in MathType 6.7. Here's a list:

ANGEL Learning	Hotmail	Schoology (Mac only)
Art of Problem Solving Forum	JoomlaLMS	SchoolFusion
ATutor (Mac only)	LearnCentral (Mac only)	Scribblar
Blackboard	LearnHub	Simplebooklet.com (Mac only)
Cobocards	LiveText (Mac only)	Spruz
Collaborize (Mac only)	Kidblog.org	S.O.S. Mathematics Cyberboard
CourseSites (Mac only)	Knotebooks	Springnote
Cramberry	MangoSpring	Springpad
Desire2Learn (Mac only)	Maple	Teachbook
DigitalChalk	Math2.org	Texify
ed2go (Mac only)	Math Help Forum	Thunderbird
Edoboard	Mathematica	TOPYX (Mac only)
EDU 2.0	MoboMath	we+
Edublogs	Moodle: TeX filter	WebAssign
EduSite (Mac only)	Ning	Wikia
eTouch SamePage (Mac only)	Nuvvo	Wikibooks
Eudora (Mac only)	Outlook	Wikidot
Evernote	Outlook Express	Wikipedia
FreeWebClass (Mac only)	PBworks	Wikispaces
Gmail	Physics Forum	Windows Mail
Google Docs (old editor)	Physics Help Forum	Wolfram|Alpha
Google Groups (Mac only)	ProProfs	WordPress
Google Sites (Mac only)	Purplemath Forums	Yahoo Mail
	Quia Web	Zoho Writer

For the apps that don't have a translator, there are a couple things to try:

- **For software applications and websites** that have LaTeX built in, the first thing to do is determine the type of "delimiters" it uses. Some apps enclose the math in tags like [tex]…[/tex], and others use more standard delimiters like $...$ or \[…\]. You may be able to find a suitable translator in the "Equation for application or website" group of MathType's Cut and Copy Preferences dialog, but if not, you can probably be successful by typing the delimiters manually and using the Zoho Writer translator, which doesn't use any delimiters.

- **Some Web 2.0 apps (like Zoho Writer and the *old* Google Docs)** have their own equation editor. In many cases (like these 2), you can choose a translator from MathType and paste your equation directly into the editor. Most of the time their editor is simple enough, but using MathType keeps you from having to learn another editor or from having to learn LaTeX.

- **For apps that don't have any math capability at all** (LaTeX or otherwise), the best thing to try is the Google Docs translator, and either copy & paste or drag & drop the equation from MathType.

Appendix

Free Web 2.0 Apps/Sites I Recommend

Perfect for math/science teachers

#**Wolfram|Alpha**. http://www.wolframalpha.com (There's a special MathType translator for W|A.)

Chat/IM/SMS

Chatzy: http://www.chatzy.com/advanced.htm

Contxts: http://contxts.com (SMS business cards. Text **MrMathType** to **50500** for mine.)

Twitter

Poll Everywhere: http://www.polleverywhere.com (Good for adding polls to PowerPoint slides.)
(Can be used for warm-ups or mid-lesson retention questions, but no math capability.)

PowerPoint Twitter Tools: http://www.sapweb20.com/blog/powerpoint-twitter-tools

Visible Tweets: http://visibletweets.com (visualize tweets sent by your class)

Free websites/blogs/wikis

#WordPress: http://wordpress.com (Absolute best – free blogs, math capability – use the **WordPress** translator in MathType 6.7 and later.)

#Zoho Wiki: http://wiki.zoho.com (Has a built-in equation editor, but it's easier to use MathType.)

Good resource websites & articles

Setting up and Introducing a Collaborative Student Math Wiki:
http://langwitches.org/blog/2009/10/20/setting-up-and-introducing-a-collaborative-student-math-wiki

North Scott begins using cell phones in classroom: Article in Quad-City Times: http://bit.ly/a9tNs2

What is Social Media? (free e-book – PDF)
http://www.icrossing.co.uk/fileadmin/uploads/eBooks/What_is_Social_Media_iCrossing_ebook.pdf

How to use Facebook for Social Learning: http://c4lpt.co.uk/140Learning/facebook.html

How to use Twitter for Social Learning: http://c4lpt.co.uk/140Learning/twitter.html

More Challenges with Wikis: 4 Ways To Move Students from Passive to Active:
http://thejournal.com/articles/2009/10/07/more-challenges-with-wikis-4-ways-to-move-students-from-passive-to-active.aspx

PLN Yourself! http://suewaters.wikispaces.com (Describes Personal Learning Networks.)

Time for upgrade – 20 ways to become Teacher 2.0: http://jazzper.se/2009/11/time-for-upgrade-20-ways-to-become-teacher-2-0/ (*Note:* I couldn't verify this link.)

Using Wikis in Math Classes:
http://teachertipstraining.suite101.com/article.cfm/using_wikis_in_math_classes

Using Wiki Technology to Engage Students:
http://teachertipstraining.suite101.com/article.cfm/using_wiki_technology_to_engage_students

When The Empire Makes The Rules (some thoughts on cell phone use at school):
http://nashworld.edublogs.org/2009/11/23/when-the-empire-makes-the-rule

# Example sites I used during the presentation

These are in the same order in which they appeared during the presentation.

- **Precal Blog:** (Mr. Byrne) http://prec.alcul.us
  Good example of scribe blogging.

- **Algebra 2 With Trig:** (Kate Nowak) http://a2t910.blogspot.com/
  Mix of scribe blogging and teacher-posted lesson material. (Unfortunately it requires an authorization to log in and read the blog.)

  - o **Slideshare:** Kate uses www.slideshare.net to upload PowerPoint slides from the day's lesson, and embeds them in her blog. You can also add them to your class Facebook group. Students can access the lesson any time they want.

- **The Dalton Math Wiki:** (David Gomprecht) http://coyleyspages.wikispaces.com/
  Good examples of science wikis.

- **Mr. Lamb's Math Wiki:** (Jim Lamb) http://mrlambmath.wikispaces.com
  Integrated Math, Advanced Algebra wikis – good examples.

- **Teaching College Math:** (Maria Andersen) http://teachingcollegemath.com/
  Despite the name, there is plenty here for teachers of all levels of math.

- **MathType and WordPress:** (my site) http://mathtypeequation.wordpress.com/
  Step-by-step instructions for using MathType with wordpress.com – both getting equations *into* a WordPress blog, and copying them *from* a WordPress blog to use somewhere else. (Note that these are instructions for **wordpress.com**, not necessarily for a WordPress blog hosted on your own website (such as GoDaddy offers).

Setting MathType Fonts & Sizes (the *Style* and *Size* menus)

You most likely want your equations to match the text in your document, PowerPoint presentation, or web page, so you need to know how to change the fonts & font sizes in MathType.

The Style Menu – setting the fonts.
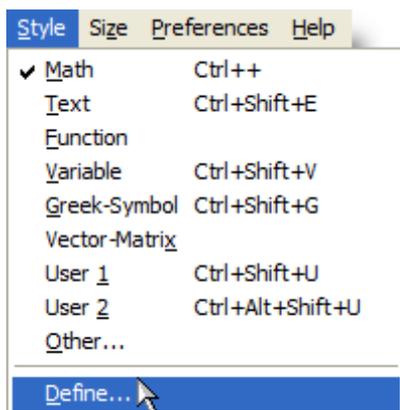
You'll see several style names listed on the MathType Style menu, but the one you'll use most often is called "Math". Actually, Math isn't a style of its own; it's a combination of other styles. MathType is smart enough, for example, to know that when you're typing $\sin\left(\frac{\pi}{2}x\right)$, you probably want the variable and the lower-case Greek letter to be italicized, but not the function name or the number. Thus, MathType switches between Function, Variable, Greek-Symbol, and Number styles as appropriate. ("Number" isn't a style you see on the menu, but it is a separate style of its own, as we'll see in a minute.) To set all this up, select "Define", at the bottom of the menu.

When you select Define, you'll see another "dialog box". (A "dialog box", or simply "dialog", is a window like the one shown to the right where you can select options and settings.)

In the Define Styles dialog, you'll see a couple of "radio buttons" labeled Simple and Advanced. We'll go over each of these. "Simple" is the one you'll use most often.

In the selection labeled "Primary font", the font you choose will be the font MathType will use for text, function names, variables, vector and matrix names, and numbers. Normally you'll want all of these to be the same font, but we'll see in a minute how to make them different. You'll probably want the Primary font to be the same font you're using in your document. MathType doesn't know what font you're using in your document, so it's important to set it here.

The selection labeled "Greek and math fonts" isn't normally changed. You'll see you have only two options there anyway – "Symbol and MT Extra" and "Euclid Symbol and Euclid Extra". You likely won't see much difference between these two choices, so leave it set as you see above.

At the lower right of this dialog is a final checkbox, labeled "Use for new equations". This is checked by default, and if you leave it checked, all subsequent equations you create will use these same font settings until you change them again. If you're just wanting the next equation to have a certain special look, but want the rest of the equations to look like the equations before the one you're working on, *un*check this box.
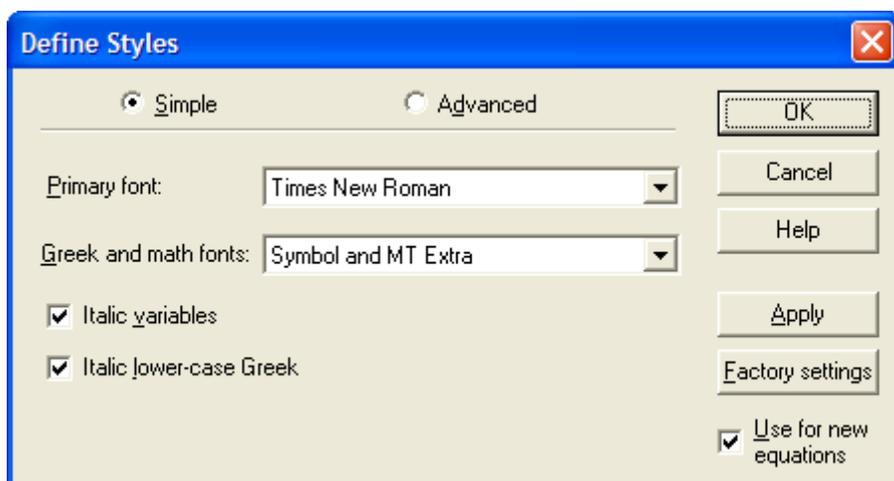
After everything's set the way you want it, click OK and the dialog closes.

Now click on Style/Define again, and this time select Advanced. You'll see the dialog that's pictured to the right. This is where you would make special settings, like if you wanted all the numbers in Arial and the rest of the equation in Times New Roman, for some reason. Notice also the boxes labeled Bold and Italic. Check or uncheck as desired. (By the way, "L.C. Greek" is lower-case Greek. Guess what "U.C. Greek" is?)
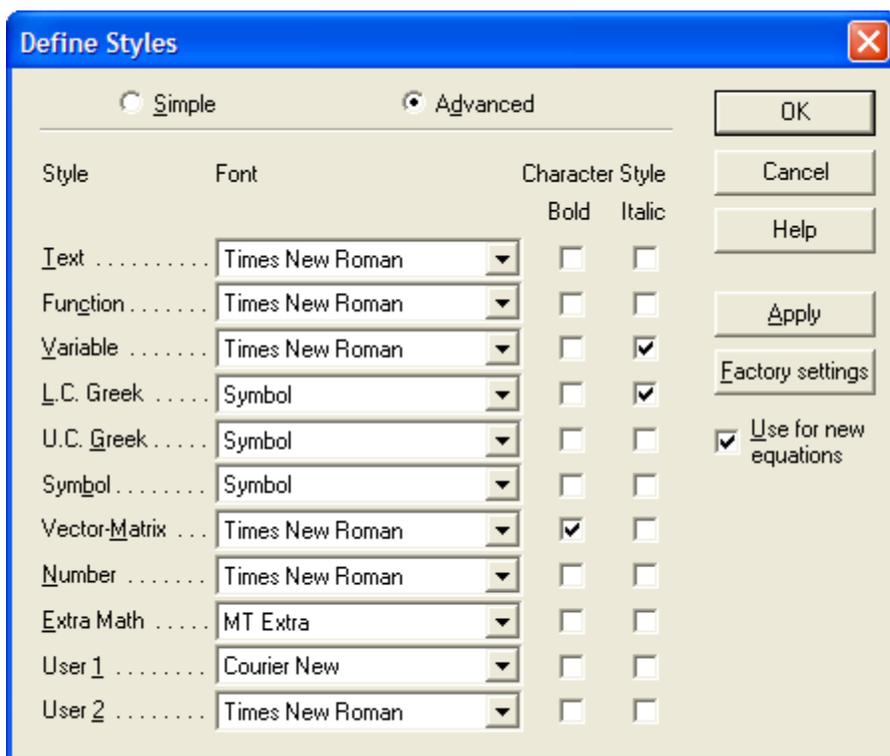
User 1 and **User 2** styles are not *normally* used, but when you need them, they're quite handy. One example where you may want to use a "User" style is if you're discussing the effect of a variable's 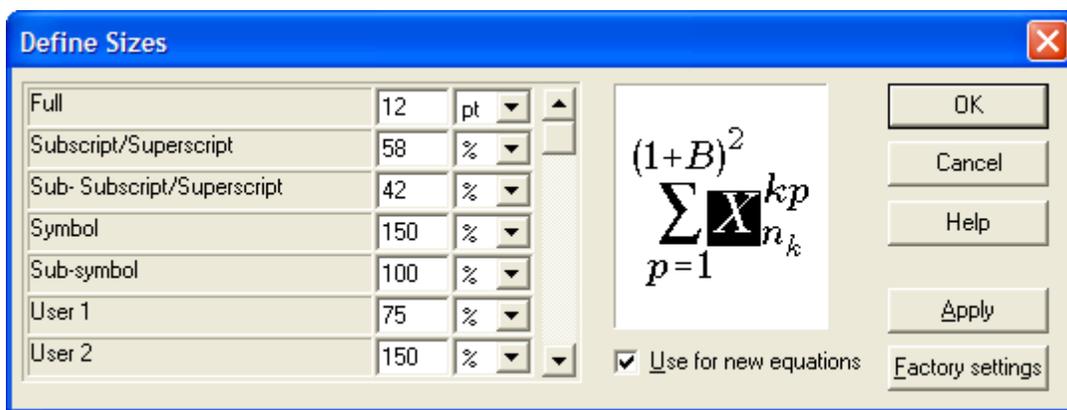coefficient on a graph (or you want the student to do so), so you choose to have the variables in Times New Roman italic, but the coefficient in Times New Roman bold italic. For example, I could say, "Describe the effect on the graph of the function when the value of a increases: $y = ax^2 + bx + c$." In this example, I used **User 2** style for the coefficient a.
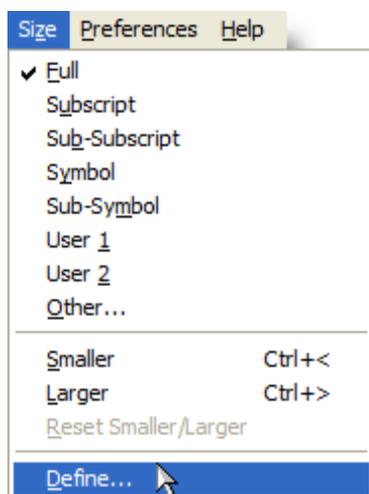
The Size Menu – setting the sizes.

Just like MathType automatically changes the style depending on the types of items contained in your equation, it also changes sizes. For most of your equations, you'll just leave the size specification set to "Full". When you type an exponent, MathType knows you want it to be smaller than the base, so it switches to "Subscript" size. Likewise, if you're teaching sequences and series, and want to enter a summation template, MathType knows to create the Sigma symbol larger than the surrounding variables and numbers, so it switches to "Symbol" size. Even though this switching is automatic, you still have control over what sizes MathType uses when it selects these special sizes. To specify these sizes, select "Define" at the bottom of the Size menu.

The "Define Sizes" dialog is quite different from the Define Styles dialog. One of the major differences is the presence of a "preview window". The preview window doesn't show you the actual equation you may be working on, but it does give you an indication of what exactly will change if you change the setting that's highlighted to the left of the preview window. For example, in the picture above, the only thing that will change in that sample equation when I change the "Full" size setting (notice the "12" is highlighted) is the *X*.

In MathType, the size setting called "Full" is the setting that you want to be identical to the text size in your document. If you're typing a test, and you're using 11-pt type size, make sure the MathType "Full" size is set to 11-pt.

Notice the rest of the sizes (except "Smaller/Larger Increment") are specified as a percent. Percent of *what*? These are percentages of the "Full" size. The beauty of leaving these set as percentages is that once you set them, you never have to change them! If you change the Full size from 10-pt (like you may use in a quiz) to 32-pt (like you may use in PowerPoint or on an overhead transparency), you don't have to change the other sizes because they're still proportionally correct. If you *want* to set these other sizes as point sizes, you have that option, but chances are you won't want to. (Notice there's a User 1 and User 2 size. Use these similarly to the way you'd use a User 1 or User 2 style.)

So, what's a "Smaller/Larger Increment"? Notice back up on the MathType Size menu (pictured at the bottom of the previous page), two items near the bottom are labeled "Smaller" and "Larger". If you want to make an item or items in your equation smaller or larger than the surrounding items in the equation, you can select them, and repeatedly select Smaller or Larger from the Size menu until you get the size you want. How much smaller or larger MathType makes them is determined by the "Smaller/Larger Increment" on the Define Sizes dialog.

BEWARE – It's generally not a good idea to highlight an entire equation and select Smaller or Larger, because the results will almost certainly *not* be what you wanted! (see below) If you want to increase or decrease the size of an entire equation, the best way to do it is by changing the Full size specification. You may want to deselect the "Use for new equations" checkbox.

Example: 10-pt: x^2; 18-pt: X^2; 10-pt plus 8 "larger" applications: x^2

Notice that the 18-pt expression is proportionally correct, but the 10-pt equation that was converted to 18-pt by repetitively clicking "larger" on the size menu has an exponent that is too large. That's because both the base and the exponent are increased by 1-pt each time you click on "larger".

Keyboard Shortcuts

The keyboard shortcuts built-in to MathType are listed in the Help file. You'll find, that most of the shortcuts are so intuitive that you can learn them quickly though, and be able to use the software even more efficiently to create professional-looking documents.

Many of the shortcuts used in MathType are "standard" shortcuts – such as CTRL+S for save, CTRL+C for copy, CTRL+V for paste, etc. (On the Mac, most of the time you can substitute the COMMAND key for the Windows CTRL key.) Listed here are some of the most commonly-used keyboard shortcuts:

Text mode..SHIFT+CTRL+E

Math mode ....SHIFT+CTRL+=

Greek letters ....CTRL+G, followed by corresponding letter of the alphabet
(a for alpha, etc.)

Expanding" parentheses................................CTRL+9

Full-sized fraction template...........................CTRL+F

Radical (square root) ....CTRL+R

Superscript (exponent) ....CTRL+H ("h" for "high"; COMMAND+E on the Mac)

Subscript ....CTRL+L (" ℓ " for "low")

Thin space...CTRL+SPACE

Insert equation in Word ....CTRL+ALT+Q

Edit equation in Word ....ALT+O (select the equation first)

For more keyboard shortcuts, you can refer to

- "Customize Keyboard" in the MathType Preferences menu

- The MathType Help file under "MathType Reference/Keyboard Shortcuts."

- The Equation Editor Help file: "Reference Information/Keyboard Guide."

Also note that in MathType, when you point to an item with the mouse, the description and keyboard shortcut are displayed in the Status Bar:

MathType displays description and keyboard shortcut information in the status bar. Equation Editor displays only the description.
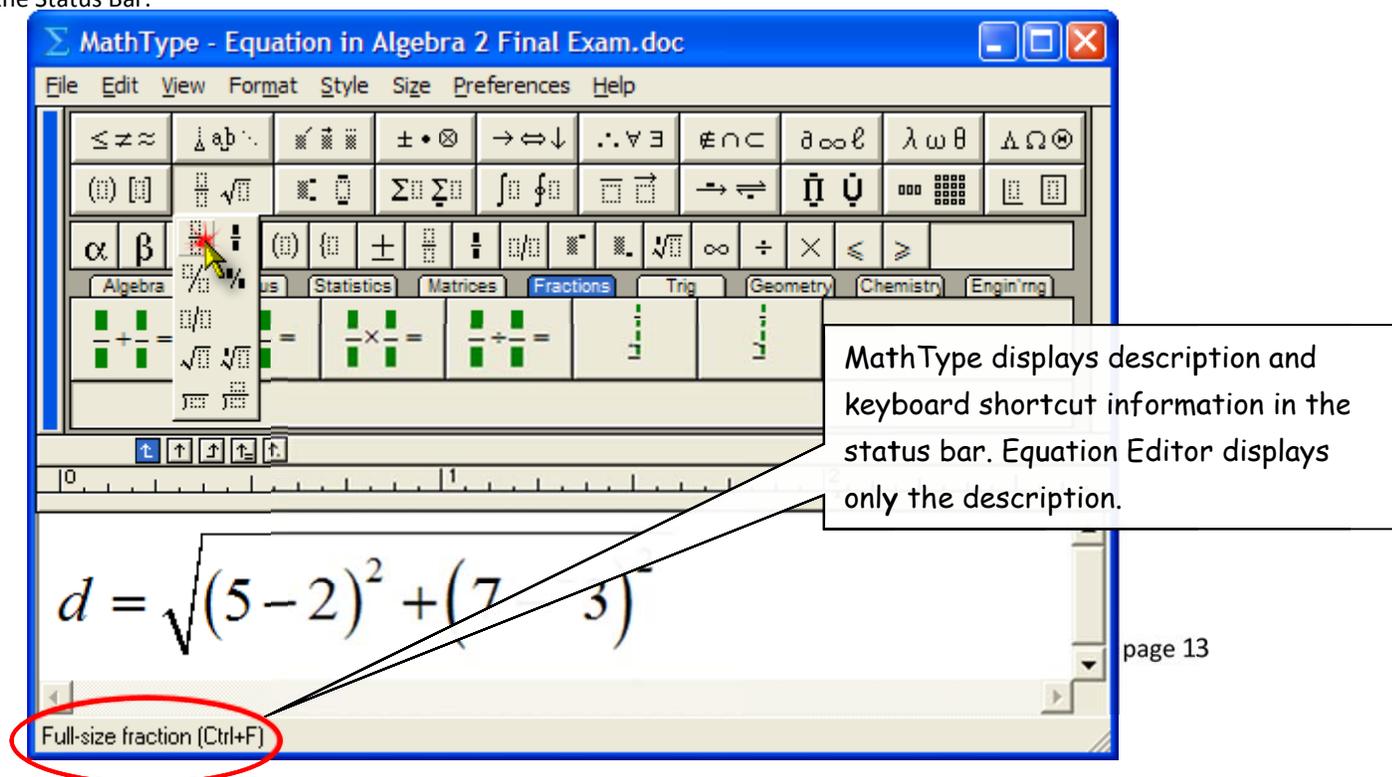
What else can I do with MathType that I can't do with Equation Editor?

1. MathType includes over 200 symbols and templates that are not included in Equation Editor. Some of these are shown here. Examples: $\ll \gg \sim \approx [\![\ ]\!] \odot \nearrow \rightleftharpoons \rightleftarrows \mathbb{R} \dagger \measuredangle \sphericalangle \|$

   In addition, MathType 5 includes the ability to include a tilde, hat, arc, or harpoon (vector barb) over more than one character. It also includes cross-out templates for showing cancellation.

   Examples: $\overparen{AB}$ $\dfrac{44\ \text{ft}}{\cancel{\text{sec}}}\left(\dfrac{60\ \cancel{\text{sec}}}{1\ \text{min}}\right) = \dfrac{2640\ \text{ft}}{\text{min}}$ $\dfrac{\overset{1}{\cancel{2}}}{\underset{2}{\cancel{4}}} = \dfrac{1}{2}$

2. *Color*. MathType 5 lets you color all or part of an equation, or use multiple colors in a single equation. This is great for making captivating PowerPoint presentations or for printing color transparencies on an ink jet printer.

3. *Web publishing*. MathType lets you save your equations as GIFs to use in your web documents. MathType also generates MathML – an XML-based markup language that is the W3C standard for publishing mathematics on the web. MathType 5 includes features that let you make great-looking Web pages directly from Microsoft Word. These Web pages retain equation numbering and referencing, include the "MathZoom" feature to allow easy readability of small characters, and print in word-processing quality directly from the browser.

4. *Equation numbering*. Not everyone needs to number equations or include references to equations in the text of a document. If you are a textbook author or write manuscripts for journal publication, you will appreciate the fact that MathType can number and reference your equations automatically when used with Microsoft Word.

5. *Precise formatting ruler*. You get a sophisticated word processor-like ruler for precise formatting. Align columns at operators, decimal points, or set tab stops to make formatting easier and to give your documents a more professional look. This example cannot be duplicated exactly in Equation Editor for two reasons: cross-out templates, and ruler formatting (fractions aligned at right edge with a right-justified tab).

$$3\tfrac{1}{2}\cdot\tfrac{2}{2} = 3\tfrac{\overset{2}{\cancel{3}}\ \overset{6}{\cancel{\tfrac{}{}}}}{4}$$
$$\underline{-\tfrac{3}{4} \qquad -\tfrac{3}{4}}$$
$$2\tfrac{3}{4}$$

6. New spacing adjustments possible:

   - Radical "check mark" width adjustment: $\sqrt{2}\ \ \sqrt{2}\ \ \sqrt{2}$

   - Subscript and superscript horizontal gap: $x^2\ \ x^2\ \ x^2$

   - Slash and diagonal fraction gap: $\frac{1}{2}\ \ \frac{1}{2}\ \ \frac{1}{2}$

   - Horizontal gap between fence templates (parentheses, brackets, braces, etc.) and their contents: $\left(x^2-4\right)\left(x^2-4\right)\ \left(x^2-4\right)$

   - Stroke thickness for box lines, strike-throughs, radical signs, etc:

$$\frac{1}{\underset{2}{\cancel{\sqrt{2}}}}\cdot\frac{\sqrt{2}}{\underset{2}{\cancel{\sqrt{2}}}} \qquad \frac{1}{\underset{2}{\cancel{\sqrt{2}}}}\cdot\frac{\sqrt{2}}{\underset{2}{\cancel{\sqrt{2}}}} \qquad \frac{1}{\underset{2}{\cancel{\sqrt{2}}}}\cdot\frac{\sqrt{2}}{\underset{2}{\cancel{\sqrt{2}}}}$$