Basic Techniques for Equation Editor and MathType Users

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Welcome to *Basic Techniques for Equation Editor and MathType Users*.

This session is designed to help you get the most out of Equation Editor and MathType – the professional version of the Equation Editor included in Microsoft Office. Rather than a complete tutorial or full training session, we will use the allotted time to demonstrate how to create mathematical expressions with these products and how to best insert them into Microsoft Word documents, PowerPoint presentations and Web pages.

I hope many of your needs will be addressed in this session but if you need help in the future, the following sources are available:

- ✓ **Equation Editor Tips & Tricks** – The MathType web site: http://www.dessci.com, includes *Equation Editor Tips & Tricks* to help get the most out of the junior version of MathType. Although these were created with Equation Editor users in mind, there are tips appropriate for the MathType user as well. Your email address will be your password to access the page immediately. Visit as often as you like, as we add more from time to time.
- ✓ **Help File** – Both products have extensive help files.
- ✓ **User Manual** – MathType comes with a comprehensive User Manual, and many questions can be answered by referring to this manual. Chapter 4 of the MathType User manual includes 18 step-by-step tutorials to get you started.
- ✓ **Technical Support** – We provide lifetime technical support for MathType. For technical support:
  - Phone: 562-432-2920
  - Email: support@dessci.com
  - Web: http://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.

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(We will create this document during the session. Don't worry if the mathematics on this page isn't what you teach. The techniques we will learn here will be exactly what you need.)

REVIEW

1. Identify the points of discontinuity, if any, of the following function: $f(x) = \dfrac{x^2 - x - 6}{x + 2}$

2. Describe the relationship between the graphs of the following two functions:

$$h(x) = e^{\sqrt{2}x} \qquad\qquad k(x) = e^{\sqrt{2}x} + 2$$

3. Points A, B, and D are on $\odot C$. If $m\angle ACB = 40$ and $\overline{AD}$ is a diameter, find $m\widehat{ADB}$.

4. Solve for x, y, and z:

$$\begin{cases} 3x + 4y + z = 17 \\ 2x + 3y + 2z = 15 \\ x + y = 4 \end{cases}$$

5. Use series to approximate the value of the integral $\displaystyle\int_0^{1/2} \frac{\tan^{-1} x}{x}\,dx$.

Keyboard Shortcuts

MathType was designed with a "point and click" interface. Find the symbol or template you need, click on it, and it becomes part of your equation. The programs also have many keyboard shortcuts, so you can access the commonly-used symbols and templates without having to take your fingers off the keyboard.

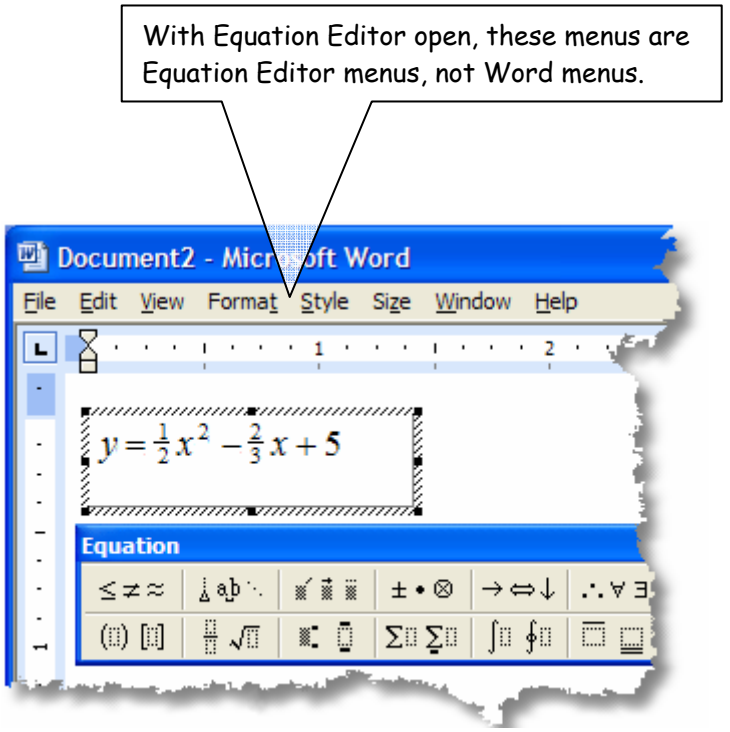
The keyboard shortcuts built in to MathType are listed in the Help file. You'll find though, that most of the shortcuts are so intuitive that you can learn them quickly, and be able to use the software even more efficiently to create professional-looking documents. The Windows version of MathType lets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

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, substitute the **COMMAND** key for the **CTRL** key.) Listed here are some of the most commonly-used keyboard shortcuts:

Text mode	CTRL+E
Math mode	CTRL+=
Greek letters	CTRL+G, followed by corresponding letter of the alphabet
"Expanding" parentheses	CTRL+9
Full-sized fraction template	CTRL+F
Radical (square root)	CTRL+R
Superscript (exponent)	CTRL+H ("h" for "high")
Subscript	CTRL+L ("ℓ" for "low")
Thin space	CTRL+SPACE

For more keyboard shortcuts, you can refer to "Customize Keyboard" in the MathType 5 for Windows Preferences menu or in the MathType Help file under "MathType Reference/Keyboard Shortcuts."

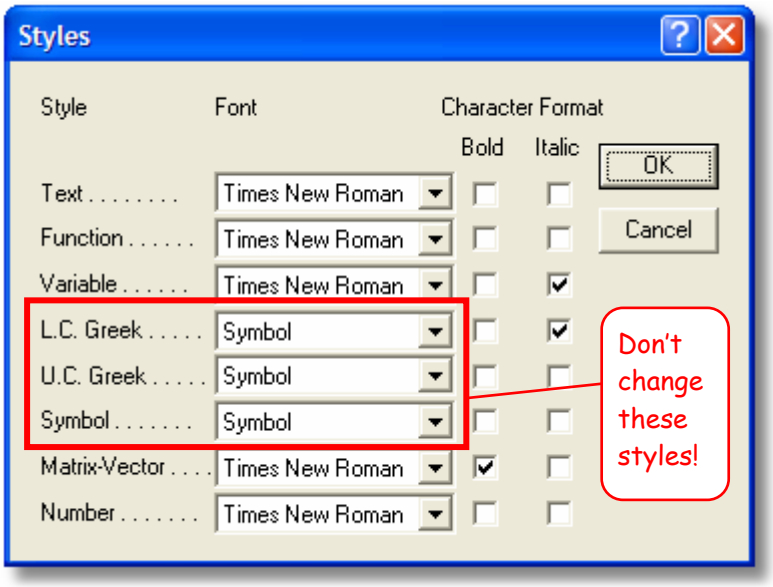
Setting Font Styles in Equation Editor



Setting font styles & sizes in Equation Editor is a simple process. Follow these steps:

1. Open Equation Editor.
2. In the **Style** menu, click **Define**.
3. Set the styles to the desired font by using the drop-down lists. The styles Text, Function, Variable, Matrix-Vector, and Number may be set to whatever font you want. Normally these 5 styles are the same as each other, and the same as what you're using in Word.

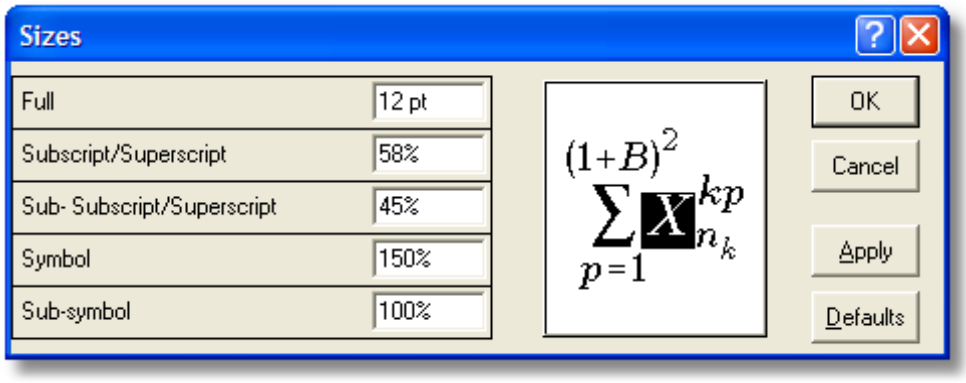
   CAUTION: These 3 styles must always be set to Symbol font: L.C. Greek, U.C. Greek, and Symbol. Failure to do this will cause unpredictable results.



Setting Font Sizes in Equation Editor

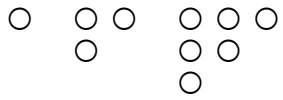
1. Open Equation Editor.
2. In the **Size** menu, click **Define**.
3. Set the Full size to the same size as your text in Word. Use "pt" to denote points.

   Suggestion: Set the Full size in points, and the other sizes in percent. That way when you change the full size setting, you don't need to change the others. They will retain the proper proportion. Use these percentage values as a guide; revise as desired:



Sixth Grade Examples

1. Three drawings are shown. What would the next three look like?



2. Find the value of this expression:
$(12-9)\times(6+1)$

3. Compare. Use <, >, or = to complete the statement:

a. $5-3\times1 \square (5-3)\times1$

b. $4\frac{15}{20} \square 4\frac{21}{28}$

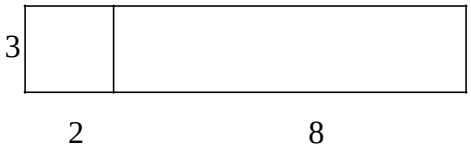
4. Write a variable expression for this model. Squares represent ones; shaded rectangles represent variables:

5. Add or subtract. Use models as needed.

a. $\begin{array}{r} 7.1 \\ -0.8 \\ \hline \end{array}$

b. $\begin{array}{r} 1.2 \\ +0.91 \\ \hline \end{array}$

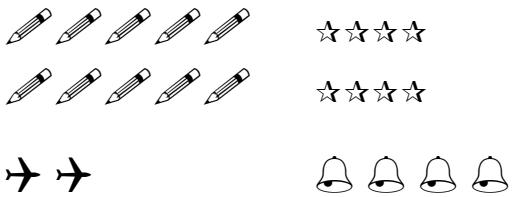
6. Find the areas of the two parts of the rectangle. Then find the total area of the rectangle.



7. Find the quotient: $24\overline{)120.60}$?

8. Find the sum: $\frac{3}{10}+\frac{4}{5}=$ _____

9. Write each ratio as a fraction in simplest form:



a. pencils : bells
b. stars : airplanes
c. bells : stars

10. Stefan and Wanda played a game and completed the table below:

Stefan wins	𝍸 𝍸 𝍸 𝍸 𝍸 |
Wanda wins	𝍸 |
Times played	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ||

a. Find Probability (Stefan wins) and Probability (Wanda wins).

b. Do you think the game is fair? Explain.

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: $\ll \gg \sim \approx [\![ ]\!] \odot \nearrow \rightleftharpoons \rightleftarrows \mathbb{R} \dagger \measuredangle \not< \parallel$

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

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).

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

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: $1/2\ \ 1/2\ \ 1/2$
   - 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:

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

MathType for $69 for
CMC Palm Springs attendees.
(must order before December 5, 2005)

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Special MathType price $69

For a limited time we are extending this special price to you and your colleagues. Call 800-827-0685, tell the operator you heard about MathType at the **CMC Conference in Palm Springs**, and you can order *unlimited* copies of MathType for only $69 each (plus shipping) until December 5, 2005. You can also save on shipping costs by downloading MathType from our CMC attendees web order form (order form also expires **December 5**): **http://www.dessci.com/cmcs05.asp**

If you're interested in a school or district license, we offer special pricing. There is an information sheet in this package. You can call the 800 number above for more information, or call your sales manager directly.

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