



The ultimate Equation Editor on the planet!

User Guide

MathMagic Personal Edition

MathMagic Pro Edition

MathMagic Prime Edition

For Mac OS X

v7.x

English

rev. 20

2011.11

www.mathmagic.com

InfoLogic, Inc.

Preface

Thank you very much for purchasing MathMagic.

MathMagic was developed by InfoLogic, Inc. The first version of MathMagic for Macintosh was released at the Seybold Expo San Francisco in 1998, the electronic publishing exhibition in the United States. Today, MathMagic is used in about 100 countries around the globe, contributing greatly to the editing and publishing of numerous mathematical and technical documents, to the exchange and conversion of technical information, and to the production of educational material.

While MathMagic has been developed for intuitive and easy use, we recommend that you read through this User Guide before using the product in order to quickly familiarize yourself with the features of MathMagic and to use it to its fullest potential.

For information not contained within this User Guide, or to request development of new features, please contact the MathMagic customer support team or the place of purchase.

We look forward to seeing MathMagic increase your productivity and product quality.

Thank you.

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Email: support@mathmagic.com
Web: www.mathmagic.com

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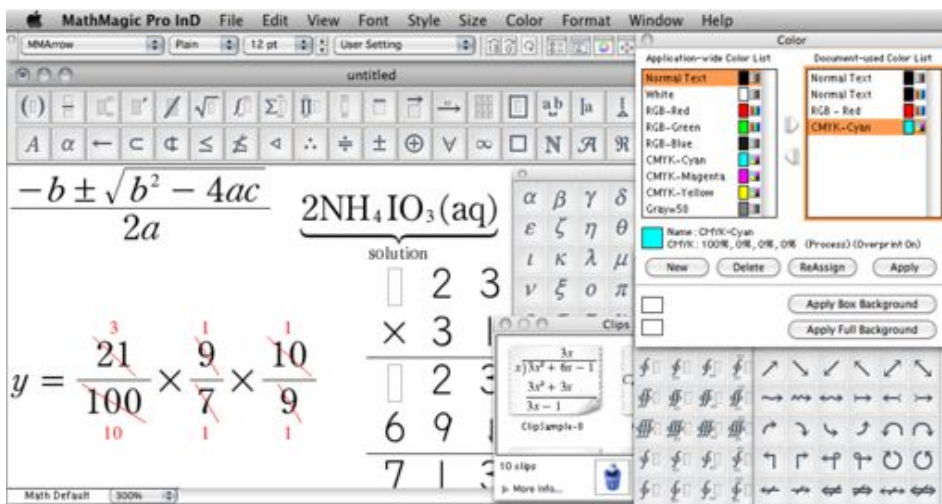
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I. Introduction to MathMagic

MathMagic is an equation editor equipped with the WYSIWYG interface and automatic formatting engine for editing mathematical expressions and scientific symbols.

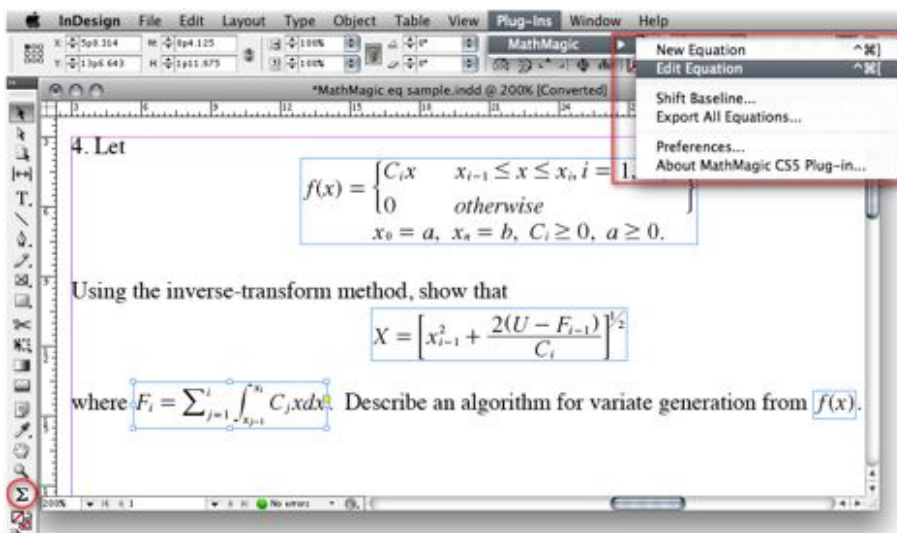
MathMagic provides a variety of powerful features to create, edit, and convert equations. With MathMagic, you can quickly create complex equations and easily use them in other software or documents, enabling you to create test sheets, educational material, technical documents, research reports with equations, or essays and presentation slides containing complex symbols and equations. MathMagic equations look beautiful too.



[Image 1-1] MathMagic main interface (MathMagic Pro Edition)

MathMagic Personal Edition for Mac OS X is a stand-alone, general-purpose equation editor that is appropriate for individual users.

MathMagic Pro Edition comes in two types - one for Adobe InDesign and the other for QuarkXPress. Whereas **MathMagic Pro for Adobe InDesign** comes with MathMagic plug-in for InDesign, **MathMagic Pro for QuarkXPress** comes with Quark XTensions. MathMagic Pro Edition offers greater functionality including support for color EPS, various font settings, and equation form settings that are more precise than those of the Personal Edition. These products are ideal for professional editing and publishing carried out with desktop publishing software such as InDesign or QuarkXPress.



[Image 1-2] MathMagic equations and MathMagic Plug-in interface in Adobe InDesign

MathMagic Prime Edition is a more professional version for a certain specific target market or some large publishers, which includes customized features, exclusive symbol fonts, more precise editing features, more specialized equation forms and default settings, as well as various other features in addition to the functions of MathMagic Pro Edition.

All versions of MathMagic come with an interface that is very intuitive. As such, no matter which version you use - or even if you are a first-time user - you can easily and conveniently create the desired form of your equation.

Advanced users can specify various settings including the type and the size of the font, spacing, style, line thickness, and the shape of equation. All this can be found on the Define Spacing and Define Style settings dialog box which comes with an intuitive interface and preview support.

Moreover, MathMagic comes with lots of high-quality body text fonts, Greek fonts, and symbols fonts, in OpenType or TrueType format, offering you the highest quality both in print and on screen.

For other MathMagic products including MathMagic for Windows, please refer to their respective User Guide or visit us at: www.mathmagic.com

1. Major Features

1.1 Intelligent WYSIWYG Equation Editor

The equation editor in MathMagic faithfully adheres to the WYSIWYG concept. As such, you can enter and edit the final output on screen with precision. Also, the auto formatting feature automatically specifies

the font arrangement, justification, width, thickness, size, and spacing, eliminating the need for you to specify each detail one by one while editing the equation.

1.2 Easy-To-Use Interface

With the built-in menu and the palette-based interface, you can easily input and edit complex equations. Equation templates and symbols are categorized on each palette for quick and easy access. The intuitive design of the palettes lets you enter complex equations with just a few mouse clicks.

1.3 Total Keyboard Input

Although MathMagic has numerous equation templates and special symbols clearly organized on palettes by concept for easy mouse access, entering equations may cause frequent switching back and forth between the mouse and the keyboard. As such, a keyboard-only interface was carefully researched and designed. Pressing the **Control** key displays the shortcut key number or alphabet of the item for easy access. Also, pressing the **Tab** or **Shift-Tab** key while holding down the **Control** key allows you to switch back and forth between pop-up windows for templates and symbols. It is called **Magic Control** shortcut key. By using the Magic Control shortcut key followed by an alphabets of the appropriate item can be used for quick input. Beginners and experienced users alike can minimize the use of the mouse and quickly enter equations with only the keyboard, and without memorizing the command keys.

1.4 Support for all kinds of mathematical expressions

MathMagic can produce most equations used anywhere from elementary schools to graduate schools and beyond. From equations and special characters for Science, Statistics, Accounting, Electronics, Engineering to many kinds of Chemical equations, MathMagic's capacity defies one's imagination.

1.5 A Variety of High-Quality Fonts

For desktop publishers and advanced users, MathMagic provides a variety of high-quality OpenType and TrueType fonts designed by professional font designers.
(Fonts available on each application version may vary.)

1.6 Export in PICT, PNG, JPEG, GIF, EPS, PDF, TeX, MathML, and more

Equations can be saved in PICT format, a standard image format for Macintosh, to be utilized on almost all Macintosh applications such as word processors and graphics software. The PDF format, largely used on Mac OS X, is also supported. Equations can also be exported in PNG, JPEG or GIF format to publish your work online so that it can be read on all platforms.

Desktop publishers can make use of MathMagic's Export to EPS feature to insert various complex equations in books and magazines with ease. As well, equations created on MathMagic can be exported in the TeX format or, for database publishing or web interworking, in the MathML format.

In addition, MathMagic supports a variety of other formats including ASCIIMath, Wiki Equation, and the Text-To-Speech function which reads the equation aloud. Future versions are expected to support even

more formats.

1.7 Reading Various Formats and **Batch Conversion**

MathMagic can read equations created in other applications such as MathType, MS Word Equation Editor, Google Docs, and various equations in LaTeX, Plain TeX, MathML, Wiki Equation, and ASCIIMath, as well as those various equations formats created in MathMagic itself. This allows you to import equation contents already created in other places to MathMagic, by Copying and Pasting or by Dragging and Dropping.

Utilizing MathMagic's support for various equation file formats, you can quickly and easily convert various formats into other formats in a Batch process. For example, you can convert hundreds or thousands of equations into EPS or MathML all at once. You can batch convert the font, and its size, in previously created equations by applying a StyleSet, or automatically assign file names by using a macro. This greatly improves productivity for customers who edit equations professionally.

1.8 Custom Clips and User Item Toolbar

MathMagic allows you to define and use a customized palette comprised of frequently used items. The User Item Toolbar allows you to bring together the functions you use most frequently out of the numerous items in MathMagic, increasing the speed of your work. You can access the items listed on User Items with a keyboard shortcut (Control + Shift + corresponding key).

You can also store frequently used equations on the Clips window. When listed on the Clips window, you assign shortcut keys with a macro to access the equations quickly and easily. All clip files are stored in the "*MathMagic User Data2*" folder in the Document folder, and you can share them with other users if necessary.

1.9 Flexible Custom Settings for Spacing, Style & Size, and StyleSet management

With MathMagic, you can create a unique style for your equations by specifying the spacing between each element of the equation, the width and the thickness of lines, bracket overhangs, box positions, and more. You can also specify the font and font sizes of equations, variables, numbers, functions, and Greek characters. The precision of their specification can reach up to approximately 2,400 dpi, with units including points, q, millimetres, inches, and % (relative to the base font size). All types of spacing, fonts, style, and size, which you specify, can be saved as a single **StyleSet** file to be used again at a later time. You can create multiple StyleSets in advance depending on the purpose and the shape of the equation, including test sheets, books, research reports, chemical research papers. You can then apply these settings instantly to your equations to suit a certain design and layout needs. When working with others, you can standardize the document styles by sharing the StyleSet files with other users.

You can specify your own equation shapes more accurately with MathMagic. Equation gap, line width and thickness, overhang, box position, default font and style for Math, Variable, Function, Greek, and tens of

other settings can be customized easily with visual interface thru the Preferences panel.

All in your preferred units including point, q, mm, inch, and %(relative to the base font size). All as sharp as 2400 dpi accuracy.

1.10 Colored Equation with Customized Colors

MathMagic supports colored equations. You can create color lists for frequently used colors on the Colors palette and quickly assign various colors to equation templates and symbols with ease.

MathMagic manages color swatches and user-defined colors as separate styles. By changing a color in the color style on the Colors palette, you can enjoy the convenience of changing the specified color in the document all at once. Also, the list of color styles can be shared with others, offering high productivity for desktop publishers which require a uniform color style within the same group, or for advanced users.

Colors can be managed in CMYK, RGB, Grayscale. Spot Color is also supported for custom colors.

2. MathMagic Products

MathMagic is available for Macintosh and Windows, and comes in the following product lines with varying functionality and configuration according to its purpose.

* **MathMagic Personal Edition**

This general-purpose equation editor can be used in various ways including word processing, presentations, creating web contents, simple printing, etc.

Equations created by MathMagic can be used by other applications and documents, via Copy & Paste, Drag & Drop, or Export & Import..

* **MathMagic Pro Edition for Adobe InDesign**

In addition to general-purpose use, the exclusive Adobe InDesign plug-ins in the application allows you to quickly create and edit equations on InDesign documents with ease.

* **MathMagic Pro Edition for QuarkXPress**

In addition to general-purpose use, the exclusive QuarkXPress XTensions files in the application allow you to quickly create and edit equations on QuarkXPress documents with ease.

* **MathMagic Prime Edition for Adobe InDesign**

This product offers high-quality fonts in addition to those of MathMagic Pro Edition for InDesign. The precise editing features and the forms of equations are optimized for publishers in Korea and Japan.

* **MathMagic Prime Edition for QuarkXPress**

This product offers high-quality fonts in addition to those of MathMagic Pro Edition for QuarkXPress. The precise editing features and the forms of equations are optimized for publishers in Korea and Japan.

In addition, there are products customized for the publishing environment of specific publishers, products for QuarkXPress 3.3-4.1 in Mac OS 9/Classic, and products developed for Java. Products for other operating systems can also be made available.

All installers come with a fully functional Free Trial period, which can be switched to the regular versions once authorized with a valid Customer # and License code.

For the latest information and MathMagic updates, please visit us at:

<http://www.mathmagic.com>

3. System Requirements

Please be sure to verify your system specifications before installing and using MathMagic products.

In using MathMagic as a stand-alone product, the following minimum system specifications are required. Each version of MathMagic is developed to run well in typical configurations so that it runs smoothly on most computers released several years previous to the release of the product.

MathMagic v7 for Mac OS X comes in the **Universal Binary** format, and runs natively on both Intel and Power Macintosh computers.

- **Hardware:** Intel Macintosh or Power Macintosh (For PowerPC Mac, G4 or later is recommended.)
- **OS:** Mac OS X 10.4 or later
- **Hard Disk:** Minimum 30 MB of free space for installation
- **Video:** 800 x 600 or higher in resolution (recommended)

In the case of MathMagic Pro Edition or MathMagic Prime Edition, however, there may be higher system requirements in the event that Adobe InDesign or QuarkXPress is used in conjunction with MathMagic. It is recommended that the System Requirements be verified separately for Adobe InDesign or QuarkXPress.

4. MathMagic Feature Comparison Table

The following is a comparison of the main features of MathMagic products (*based on v7.5, as of 2011.7*):

Features \ Products	MathMagic Personal	MathMagic Pro	MathMagic Prime
Platform	Mac OS X, Windows	Mac OS X, Windows	Mac OS X, Windows
Main Components	1 App, about 70+ bundled fonts	1 App, Plug-ins or XTensions, 140+ fonts	1 App, Plug-ins or XTensions, 150+ fonts (Varies)
Supported InDesign Plug-ins	No	2.0 ~ CS5.5 (Mac), CS3 ~ CS5.5 (Win)	Varies
Supported Quark XTensions	No	QuarkXPress 6.x ~ 9.x	Varies
License Type	User Based License	Computer Based Lic. (Lock to the registered Computer)	Computer Based Lic. (Lock to the registered Computer) or USB Key
EPS Export	Gray EPS only, Small size only	Color EPS, Gray EPS	Color EPS, Gray EPS
Spot color support in EPS	No	Yes	Yes
Baseline Savvy EPS	No	Yes	Yes (except Asian InDesigns)
MathML embedding in EPS	No	No	Supported (Optional)
Import Formats	LaTeX, Plain TeX, Wiki, MathML, MathType, MS Word Equation, EPS, PICT, WMF, AsciiMath, ...	LaTeX, Plain TeX, Wiki, MathML, MathType, MS Word Equation, EPS, PICT, WMF, AsciiMath, ...	LaTeX, Plain TeX, Wiki, MathML, MathType, MS Word Equation, EPS, PICT, WMF, AsciiMath, ...
Batch conversion	up to 10 files	Unlimited	Unlimited
Ruler Units	pt, q, mm, inch, %	pt, q, mm, inch, %	pt, q, mm, inch, %
Nudge Maximum Distance	Short distance (5pt)	Medium distance (20pt)	Long distance (100pt)
Custom Tuned Spacing & Factory Setting	No	No	Available
Custom Styles for Sub/Sub-sub boxes	No	Yes	Yes
Customizable TeX spacing rule	Limited	Yes	Yes
User defined size for Large Operator	No	Yes	Yes
Regular Price (US\$)	\$69 (\$89 with 2-year Free upgrade)	\$499 (\$695 with 2-year Free upgrade)	Depends on the Configuration
Academic Price (US\$)	\$49 (\$69 with 2-year Free upgrade)	\$299 (\$399 with 2-year Free upgrade)	Depends on the Configuration
1-month/6-month Subscription price	\$15.00 / \$30.00	\$75.00 / \$200.00	Not Available
School / Campus-wide License	Available	No	No
Custom Dev. Service / Bundling	Available / Available	Available / Call	Available / Call
Most other general equation editing UI and features remain same or similiar among MathMagic Personal, Pro, and Prime Editions.			

MathType™ is a trademark of Design Science, Inc. InDesign™ is a trademark of Adobe Systems Inc. QuarkXPress® is a registered trademark of Quark, Inc. All other trademarks are the property of their respective owners.

Note: MathMagic is subject to change without prior notice for the purpose of product improvement. Also, for marketing purposes, functions may vary from the comparison chart.

II. Installation and Registration

1. Installing MathMagic

MathMagic for Mac OS X does not come with a separate installer. It is provided as a CD-ROM or a disk image (.dmg) file which contains the folder with application file and other component files. You can install it simply by manually dragging and dropping the necessary files or folders, like many other Mac OS X applications.

Mac OS X largely allows you to freely install or remove applications in any location you desire. Also, Mac OS X applications often support the drop and drag method, without having to use a separate installer.

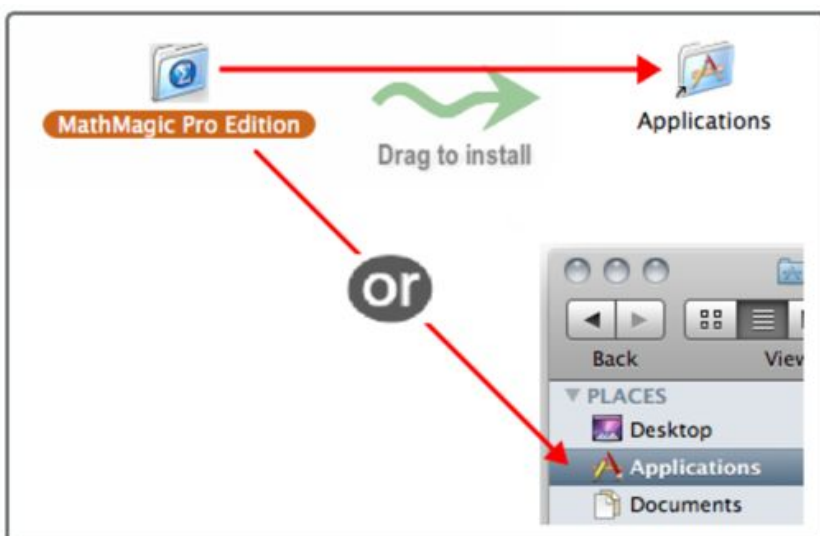
After inserting the MathMagic installer disc or mounting the disk image, the MathMagic folder will be displayed as the following:



[Image 2-1] MathMagic Installer Disk image example (MathMagic Pro Edition)

For the basic installation, you can either drag the *MathMagic Personal Edition* folder or the *MathMagic Pro Edition* folder from the left into the **Applications** alias folder on the right, or copy the MathMagic folder to a different location of your preference.

After the drag installation, and as you launch MathMagic application from the installed MathMagic folder for the first time, the basic MathMagic fonts, sample clips, etc., will be automatically installed as needed, upon your confirmation.



[Image 2-2] Drag-install to the Applications folder, or your preferred place

Once MathMagic is copied and initially launched to finish the auto-installation process, the following files (folders) will have been installed or created under the following paths:

[/Applications/MathMagic Personal\(or Pro\) Edition folder](#)

- MathMagic Personal or MathMagic Pro application
- Sample file, MathMagic Fonts folder
- InDesign Plug-ins or XTension folder(Pro Edition only)
- ReadMe First file and other documents

[/Library/Fonts folder](#) or [~\(user home directory\)/Library/Fonts folder](#)

- MathMagic Fonts

[~\(user home directory\)/Documents/MathMagic User Data2 folder](#)

- Clips, Colors, StylesSets

[~\(user home directory\)/Library/Preferences folder](#)

- MathMagic Preference file

In the case of MathMagic Personal Edition, the application only requires the copying and the initial launch to finish the installation process.

In the case of MathMagic Pro Edition or MathMagic Prime Edition, the Plug-in and XTension files which correspond to the version of Adobe InDesign or QuarkXPress which you are currently using must be installed as well. For more details on selecting the proper path and installing the files, please refer to the "MathMagic Installation Guide" provided separately.

*** *Caution:*** When MathMagic fonts are newly installed, applications that are already running or printer drivers may not recognize the new fonts properly. A restart of the computer is recommended.

2. Uninstalling

As with the installation process, the installed files of MathMagic can easily be removed manually.

To remove the application, move the following MathMagic files into Trash:

MathMagic Prime Edition folder from /Applications/, or
MathMagic Personal Edition folder from /Applications/

MathMagic Fonts folder - or each font - from /Library/Fonts/

MathMagic Plug-in in the InDesign Plug-ins folder, or
MathMagic XTension file in the QuarkXPress XTensions folder

MathMagic User Data2 folder from ~(User Home directory)/Documents/

These installation paths are subject to change without prior notice. Please refer to the enclosed ReadMe file when installing or removing the latest version of MathMagic.

Generally, when upgrading or updating to a newer version, the older version does not need to be removed. The new version can simply be installed in addition to the older version. In the case of MathMagic Pro Edition, however, upon installing a new version, the paths for MathMagic Pro application must be re-designated in the respective Preferences settings dialog box in InDesign and QuarkXPress.

3. Getting the latest version

The latest version of MathMagic is available from the MathMagic web site.

Please visit us at:

<http://www.mathmagic.com/download/>

If you have purchased a physical product, please visit the MathMagic download web page before installing the software from the CD to ensure that you have the latest version.

Also, if the "**Check for Updates**" menu item is available under **Help**, you can select this item to see if a newer version has been released.

Depending on the type of the product or the time of purchase, you may or may not be eligible for free upgrades to the latest version. For more information on the free upgrades, please visit us on the MathMagic

website or contact your retail store.

4. Customer Registration

After purchasing a MathMagic product, please complete the customer registration for prompt customer support and to receive news and updates on the latest versions of the product.

<http://www.mathmagic.com/register/>

[Image 2-3] MathMagic online registration page

Note: If the retailer where you purchased the product requires a separate product registration, please register your product through the retailer.

Registering the System ID

If you have purchased MathMagic Pro Edition, you must register the system ID of your computer and receive the License Code that corresponds to the System ID.

For instructions on how to verify your System ID and how to enter your license code, please see the following page.

5. Entering Your License Code

Once MathMagic is installed and launched for the first time, the following window will be displayed for the authorization of the software.

Trial Version

If you have not yet purchased the product but are simply trying out the software, click "**Try**" to use the software for the evaluation period.

The length of the evaluation period may vary from product to product or from version to version. Once the evaluation period expires, you must enter a valid **License Code** to continue to use the product. If a new version is released, even though the evaluation period for the previous version has expired, additional evaluation period may be added for you to experience the features of the new version.

While most features are available in the trial version, some features, such as the batch conversion or Export to EPS, may be restricted or may have a watermark.

The image shows a screenshot of the 'Authorization' dialog box for MathMagic Pro for InDesign v7.41 build 52. The window has a title bar with the text 'Authorization'. Below the title bar, it says 'MathMagic Pro for InDesign v7.41 build 52'. The main area contains the instruction: 'Please enter your Authorization information correctly, and press "Authorize" button.' There are four input fields: 'User Name:', 'Email:', 'Customer No:', and 'License code:'. The 'Customer No:' field contains the text 'Not found or invalid.'. Below these fields is the 'System ID:' field, which contains the text 'W29241YCB' and a 'Copy' button. At the bottom of the dialog, there are four buttons: 'Buy', 'Try', 'Quit', and 'Authorize'. There is also a paragraph of text at the bottom: 'If you are not registered, please "Buy" MathMagic at the online store. You may "Try" it for a while before you decide to buy.' and another paragraph: 'Trial period will be expired after a certain number of equations or a certain period of using. Once expired, a valid license is required to run MathMagic.'

[Image 2-4] Authorization dialog window

Entering the License Code

If you have received the license information after purchasing the product, please enter the User Name, Email address, Customer Number, and License Code in the Authorization dialog box accurately (case-

sensitive), and click "**Authorize**" button.

If the Authorization dialog box was not displayed at the launch, you can go to **Help -> Enter Authorization Code** menu command.

The License Code typically comes in the following format: XXXX-XXXX-XXXX-XXXX-XXXX

Once you authorize your copy with a valid License code, the application will run without displaying the Authorization nagging dialog.

Temporary License Code and System ID

If you have purchased MathMagic Pro Edition, you may receive a **Temporary License code**. Temporary license codes are provided for customers to begin working on urgent equation tasks immediately. If you receive a temporary license code, register your System ID immediately to receive your final license code. The System ID is displayed in the middle of the MathMagic Authorization dialog box. Click "**Copy**" on the right of the System ID field to copy the character string into the clipboard. You must register this character string on the MathMagic product registration webpage in order to have the **Final License Code** issued.

Customer Number

Each individual or corporate customer is issued a **Customer Number** upon purchasing MathMagic. Alternatively, each physical copy of MathMagic may come with a unique Customer Nnumber. The Customer Nnumber must be verified in registering the product, customer support, authorization of software, software upgrade, and other cases. Please do not lose your Customer Number. Along with any inquiries you may have in using MathMagic, or for customer support, the Customer Number must be supplied for a faster process.

The Customer Number comes in the following format: XXXXXX-XXX-XXXXXXX

6. Changing or Removing your License code

You may need to change some of your Authorization information, such as your name, Customer Number, and/or License code for some reasons, like upgrading or extending the current Subscription period.

When you need to open the Authorization dialog again, you can select "Enter Authorization Code..." from Help menu.

You can enter a new User name, Email address, Customer Number, or License Code to change the ownership or to extend your Free Upgrade period or Subscription period.



[Image 2-5] Authorization dialog with "Remove License" button enabled

When you need to remove your License info from a computer and move the License to another computer, you can bring up the Authorization dialog and the press '**option**' key to enable the "**Remove License**" button.

After you remove the License from a computer, you will get a Removal Confirmation code, which you may need to submit to MathMagic Customer Support team to get a new License code.



[Image 2-6] Confirmation dialog after removing a license

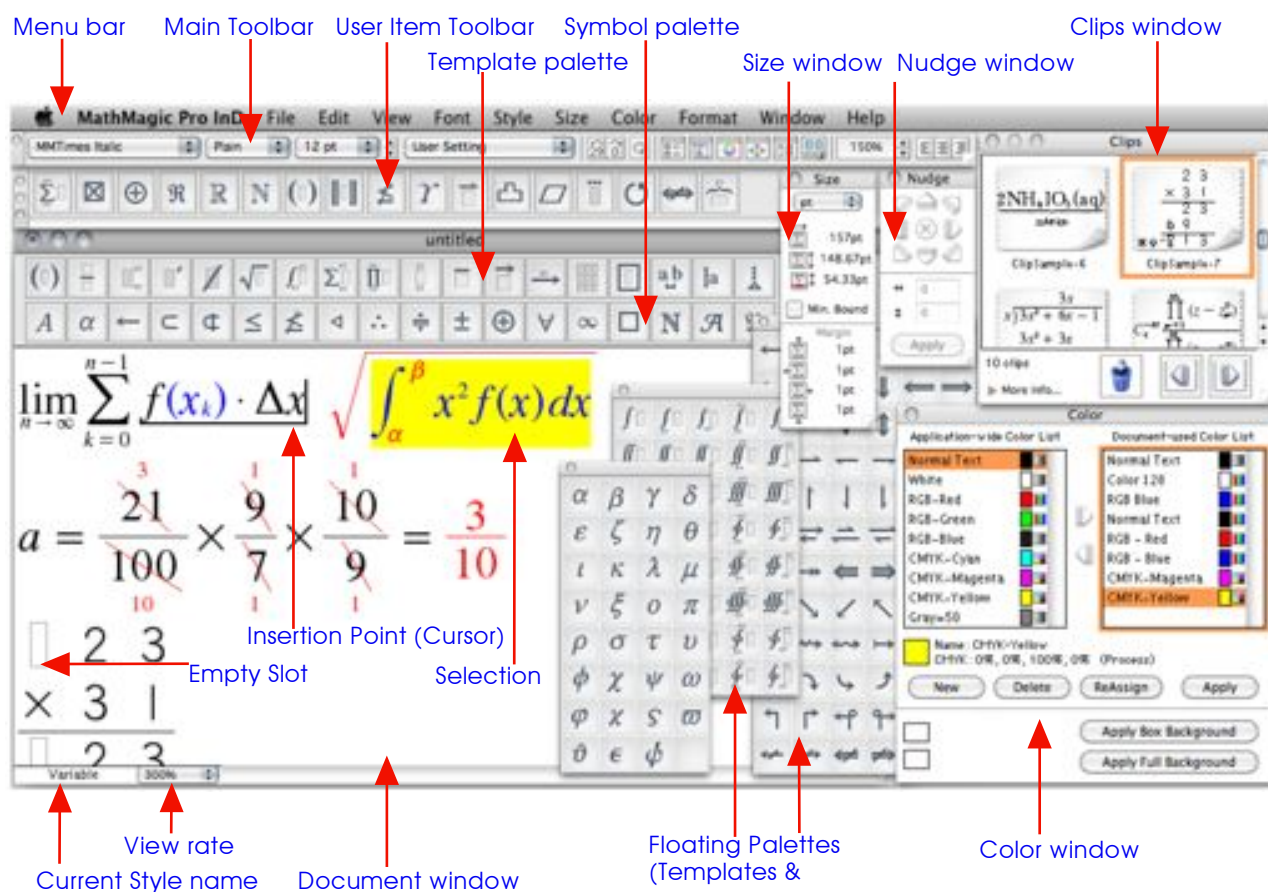
Once a License has been removed from a computer, the same License code can not be used on the same computer again.

MathMagic Licensing policy may vary over time, over MathMagic products. Please read the ReadMe file for the latest information or contact MathMagic Customer Support for more information.

III. Using MathMagic

1. Windows and Palettes

MathMagic's main interface is comprised of the equation editing window with WYSIWYG editor support, the Main Toolbar and the User Item Toolbar, various floating windows including the Clips window and the Color window, Nudge window, Size info window, the Template palettes, and the Symbol palettes, as shown below.



[Image 3-1] MathMagic main interface and names

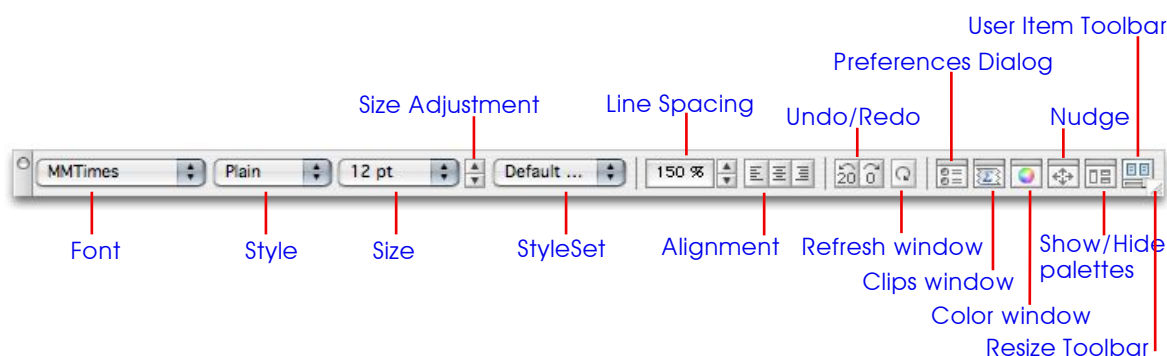
1.1 Editor window

The Editor window is where you enter and edit equations. To create an equation, select the Template palette with the equation form you wish to create, and then enter numbers/variables/symbols in the slots. For more detailed information on how to use the Template palette, see 'IV. Template Palette and Symbol Palette' in this User Guide.

In MathMagic, you can enter and edit multiple equations in multiple windows simultaneously. The Editor window supports a wide-ranging view rate from 100% to 3,200%, with the default view rate set at 300%. The default view rate can be specified by the user in 'Preferences'. A higher view rate helps when you wish to adjust the equation more precisely. The current View rate can be increased by 1%, 10%, or 100%.

- **Empty slot:** Empty slots are displayed with thin gray lined boxes. The boxes are displayed only until the actual input. Once an input has been made, the gray box disappears. You can uncheck "**Show Empty Slots**" under the View menu to make the empty slots disappear.
- **Insertion Point:** The Insertion Point or Cursor is made up of a vertical and a horizontal line, and shows where text, templates and symbols will be inserted in which box.
- **Selection:** This is an area designated by mouse drag, double-click or Shift-click. The selected area is displayed in the inverted color as specified on the computer by the current user, in the System Preferences. If the Editor window becomes inactive with an area selected, only the outline of the selected area is displayed with dotted lines. The selected part of the equation can be copied, deleted, exported, or otherwise edited such as by applying a color or a new font size.

1.2 Main Toolbar



[Image 3-2] Main Toolbar components

The Main Toolbar contains several frequently used items for easy access via mouse clicks. It also provides users with visual information for the current settings including font, size, and style of the current cursor

position, undo/redo count, and so on.

When the Main Toolbar is not displayed, you can toggle it with the "**Show/Hide Main Toolbar**" command under the Window menu.

Click the bottom right corner of the Main Toolbar to adjust the size. The size and the location of the toolbar is maintained even after you exit the application.

- **Font** popup menu: Used to change the font for the selected part of the equation.
- **Style** popup menu: Used to change the style for the selected part of the equation.
- **Size** popup menu: Used to change the font size for the selected part of the equation.
Clicking on the Up arrow or the Down arrow button next to the Size popup menu will increase or decrease the font size of the current selection by **1 point**. **control-clicking** on the arrow button will increase or decrease by **0.1 pt**. When the default Size unit is other than point(pt), the unit for Size popup menu will also be changed .
- **StyleSet** popup menu: Applies ready-made StyleSet to the current window. A StyleSet remembers all Define Spacing values, Define Size values, Define Style values, and some other settings as a set.
- **Line Spacing** button: Used to increase or decrease the line spacing of the current document or the current cursor location if nested in a box. Clicking on the Line Spacing button will display the Line Spacing Dialog Box. **Control-clicking** on Increase/Decrease arrow button will allow user more accurate adjustment of one tenth unit.
- **Alignment** button: Used to change the alignment of the current rows: left, center, or right.
- **Undo/Redo** button: Used to undo performed actions or redo undid actions step by step. It also displays how many Undo/Redo recordings are maintained. Undo or Redo can also be performed by keyboard shortcut: command-Z or command-shift-Z.
- **Refresh** button: Used to force redraw all the current document contents when there is garbage on the editor window or equation is not updated correctly for some reason.
- **Preferences Dialog**: Used to bring up the Preferences dialog.
- **Clips Window**: Used to show or hide the Clips floating window.
- **Color Window**: Used to show or hide the Color floating window.
- **Nudge Window**: Used to show or hide the Nudge floating window.
- **Show/Hide palettes**: Used to show or hide all floating Template & Symbol palettes, remembering their locations, to give user more viewable area temporarily.
- **User Item Toolbar**: Used to show or hide the User Item Toolbar.
- **Resize Toolbar**: manually adjust the size(width) of the current main Toolbar.

1.3 User Item Toolbar



[Image 3-3] User Item Toolbar with some user-defined items

Floating User Item Toolbar is a container of frequently used Template items and Symbol items. You can assign frequently used items on this toolbar. All types of templates and symbols can be assigned, and the order of the items can also be rearranged by dragging.

To assign a particular item on the User Items Toolbar, select an item from the Template palette or the Symbol palette while holding down the **Command** key.

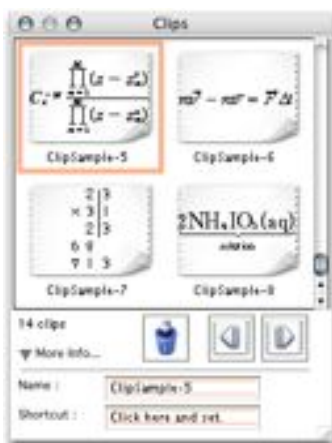
To remove items from the User Items Toolbar, click the item on the User Items Toolbar while holding down the **Command** key.

If you wish to change the order of the items on the User Items Toolbar window, click and drag the icon to the desired location.

Click the bottom right corner of the toolbar to adjust the size of the User Items Toolbar window. The specified size and location of the window is saved upon exiting the application.

The items list and order are saved in a separate preference file(UserItem Toolbar2.pref) in the "**MathMagic User Data2**" folder in your "Documents" folder so you need to be careful when you delete MathMagic User Data2 folder. You can share this file with others to share your ready-made collections.

1.4 Clips window



[Image 3-4] Clips window

Clips window is a container that saves frequently used equations. Making use of the Clips window helps minimize the bothersome, repetitive input processes.

To add an equation in the Clips window, select an equation from the Editor window and click & drag it to the Clips window or press Command + M.

When a clip is created, a name is assigned automatically in the following format: [Editor window title +

sequence number]. If you wish to change the name of the clip, click the name field at the bottom of the window and enter a new name.

When a clip is double-clicked or it is dragged & dropped in the editing window, the clip is inserted in the Editor window at the current cursor location.

You can also click the arrow buttons below the clips to sort them ascending or descending.

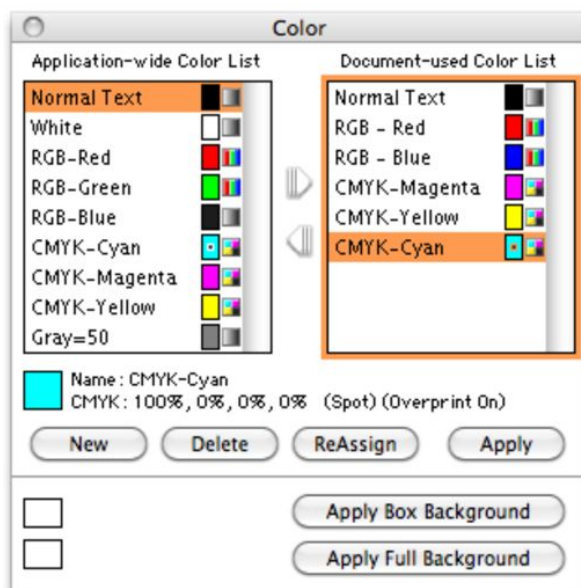
The clip files are saved in the 'MathMagic User Data2' folder in the Documents folder.

[~/Documents/MathMagic User Data2/Clips/Default/](#)

Each clip is saved in the PICT format. Clip files can be shared with others, either by copying the Default folder itself into someone else's system, or by copying a clip into someone else's Mac and then moving it to his/her Default folder. The newly copied clip will show in the Clips window the next time MathMagic is launched.

1.5 Color window

In the Color window in MathMagic, you can create, and manage, desired colors and apply the color in the selected area or where the cursor is currently placed. Select the color you want and click "Apply" button on the Color window, or double-click the color to apply it.



[Image 3-5] Color window

The Color floating window provides two color style lists, the **Application-wide Color List** and the **Document-used Color List**. Styles included in the Application-wide Color List can be used across all Editor windows in the application. Also, by sharing the **Color** folder in the **MathMagic User Data2** folder

with others, you can share the same list of pre-defined colors. The Document-used Color List shows, and manages, the colors being used in the top-most Editor window.

In the Color window, you can create colors in **Gray**, **RGB**, and **CMYK**, and, if necessary, assign **Spot colors** for color separation output.

Also, you can not only apply colors directly to the equation but select the background color of the entire equation or a particular slot. There is no default background color in MathMagic and it is set to be **transparent**. The background color can be set to **white** if necessary.

For more information on colors, please see "*VI. 9. Using Colors*".

1.6 Palette windows

Template Toolbar and Symbols Toolbar



[Image 3-6] Template toolbar and Symbol toolbar located on top of each Editor window

All equation Editor windows have two rows of toolbars, as shown above.

The first row is the **Template palette toolbar** which contains the icons that represent each template group. Clicking an icon brings up a pop-up palette containing the templates in that group, as shown in the figure below.

The second row is the **Symbol palette toolbar** which contains the icons that represent each symbol group. Clicking an icon brings up a pop-up palette containing the symbols in that group.

Pop-up Palette



[Image 3-7] A pop-up palette sample when clicked on a Template toolbar button & Detach area

While the Template palettes and the Symbol palettes are attached to the toolbar by default, they can also be

used as independent floating windows.

When you click a certain item on the palette toolbar, another palette window appears. You can click the bottom frame of this window and drag it out to detach the palette, turning it into an independent floating window. Alternatively, you can click the upper group icon and drag it down and away from the pop-up palette to detach the palette.

You can detach any palette you want. MathMagic remembers the location of the detached Template/Symbol palette and displays it in the last location when the program is launched again.

Press the Command key and click a certain item in the palette window to assign it to the **User Items Toolbar**, keeping frequently used items together in one place.

2. Menus

The menus in MathMagic follow the standard interface in Mac OS X. You can run or make use of MathMagic's major functions through the menus.

Shortcut keys are assigned to frequently used menu items, and, thanks to the intuitive menu layout, even first-time users can get to work quickly.

2.1 Application Menu



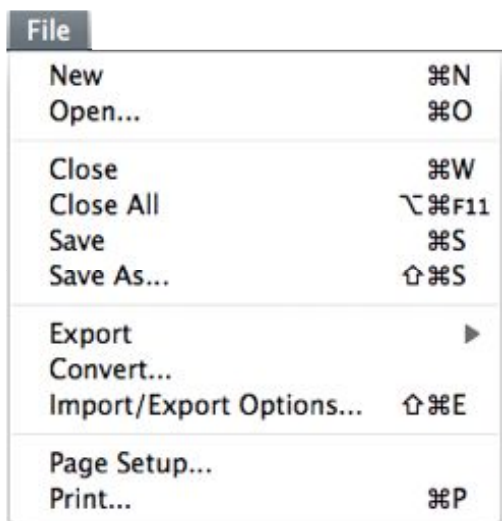
[Image 3-8] Application menu

With the Application menu, you can access information on MathMagic, open up Preferences, and quit the application.

For more detail on the **Preferences** dialog window, please read 2.3 Edit, and section 3, 4 and 5 of VII. Advanced Features for specifying spacing, styles and sizes.

When you "**Quit MathMagic**" application, it stores the current opened floating windows' size and their locations in the MathMagic Pref file located in the Preferences folder. When you run MathMagic again, it restores the last status as much as possible for your peaceful working environment. It also asks you whether to save or not if there are any unsaved windows.

2.2 File Menu



[Image 3-9] File menu

The **File** menu consists of items to create new documents and open/save/export/convert/print documents.

Open

You can open equation files in a variety of formats in addition to documents created in MathMagic.

Images saved in MathMagic in **.eps**, **.pdf**, **.pict**, **.jpg**, **.png** and **.gif** can be opened again in MathMagic to re-edit the equations.

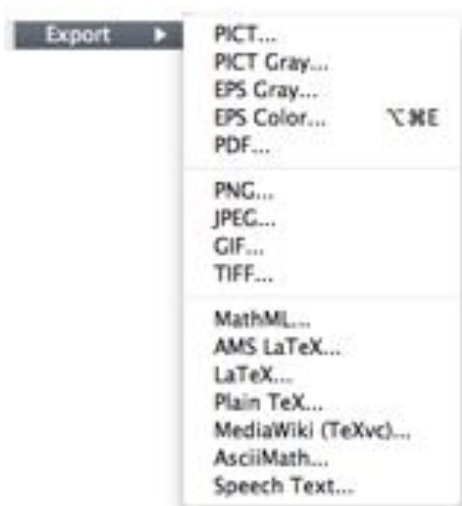
MathMagic can open **.eps**, **.pict** and **.gif** formats saved in MathType, as well as other equation-exclusive formats such as MathML, LaTeX, Plain TeX and ASCIIMath.

Instead of opening a document through the **Open command** under the File menu, you can alternatively **drag** an equation file directly onto the MathMagic application icon or drag & drop it into a Editor window to open it.

Save

Documents created in MathMagic are saved in the MathMagic format by default, with the file **extension .mmf**. This **MathMagic native .mmf file** can be opened in MathMagic for Windows as well as MathMagic for Macintosh. The MathMagic format, **.mmf**, is a text-based equation file format. Its compact file size makes it easier to share it with others, and it is also highly compatible with across versions of MathMagic.

Export



[Image 3-10] Export sub menu under File menu

MathMagic supports a variety of general-purpose formats for higher compatibility when using the edited equation in other applications or documents.

These formats include graphic formats such as gray PICT, color PICT, gray EPS, color EPS, PDF, PNG, GIF and JPEG, and formats exclusive to equations such as MathML, LaTeX, Plain TeX, Wiki, ASCIIMath, and Speech Texts. More formats are added continuously so please check the latest version.

Please note that the availability of Export options may vary over Personal Edition and Pro Edition, or in different versions.

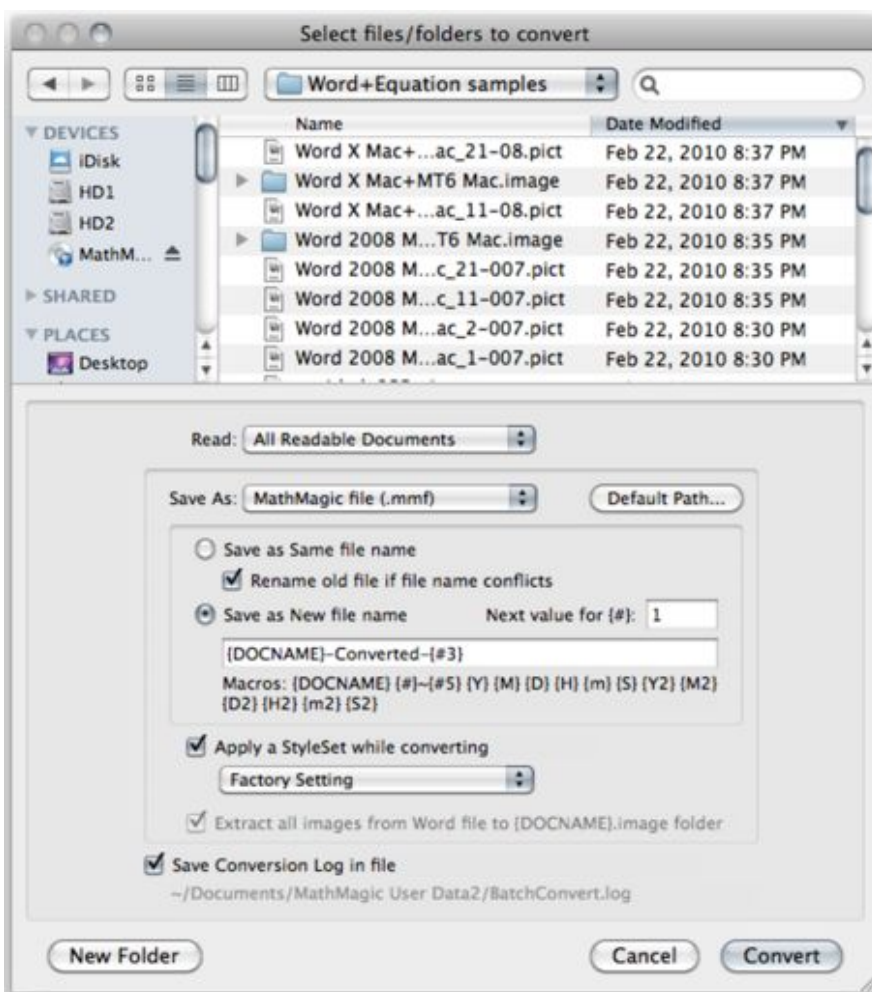
Font embedding for PDF format is supported on Mac OS X 10.6 or newer. PDF in Mac OS X 10.4 and 10.5 does not support font embedding. In this case, Adobe Distiller or some 3rd party utilities can be used to embed fonts.

Convert

With MathMagic, you can **Batch Convert** multiple equation files.

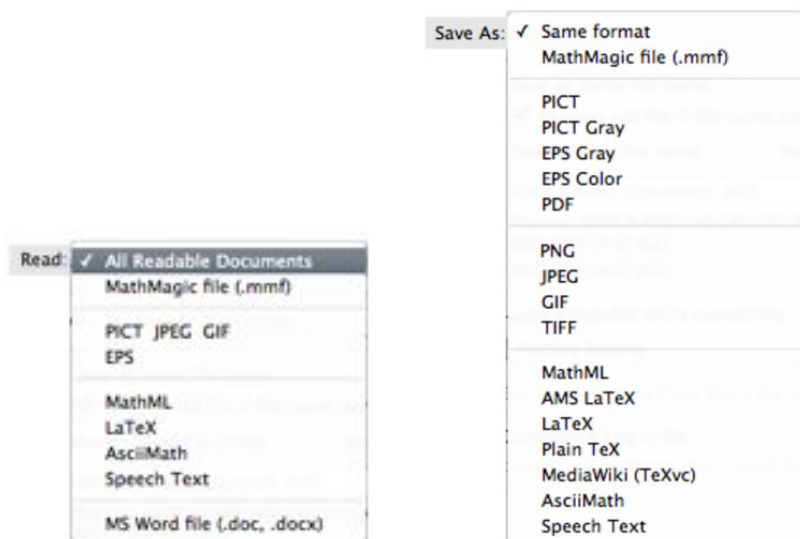
Note: The batch conversion feature is not available in demo or evaluation copies of the software.

Selecting the Convert command displays the dialog box as shown below. Select the file or folder to convert, choose the format to convert it into, and click '**Convert**'. To select multiple files, select files while holding down the **Shift** or the **Command** key. Please note that the number of files that can be converted at once is limited in MathMagic Personal Edition, and the number may vary depending on the version you are using.



[Image 3-11] Convert dialog

The file types that can be read and the converted formats available are as follows:



[Image 3-12] Read formats and Save As formats in the Convert dialog

The conversion feature can not only convert files from one format to another, but also apply a **StyleSet** while maintaining the previous format. This can help user change all fonts and sizes used in the original equation at the same time.

Simply check "**Apply a StyleSet while converting**" and select the StyleSet you want. This way, you can quickly edit equations without having to open each equation file to specify fonts and sizes one at a time.

MS Word Document Conversion

MathMagic allows you to extract all equations contained in MS Word documents or convert them into other formats such as EPS.

Select "MS Word file (.doc, .docx)" under *Read* and select the *MS Word file*. Select the format to convert the file into, from *Save As* popup menu, and click "Convert". Of the equation formats contained in the Word document, MathMagic supports equations created in MathType, MS Equation Editor, MathMagic, and soon new Equation Editor released since Word 2007.

If you check "*Extract all images from Word file to {DOCNAME}.image folder*", all equation images, and others such as JPEG, in the document are extracted and saved as individual image files in the specified *{DOCNAME}.image* folder.

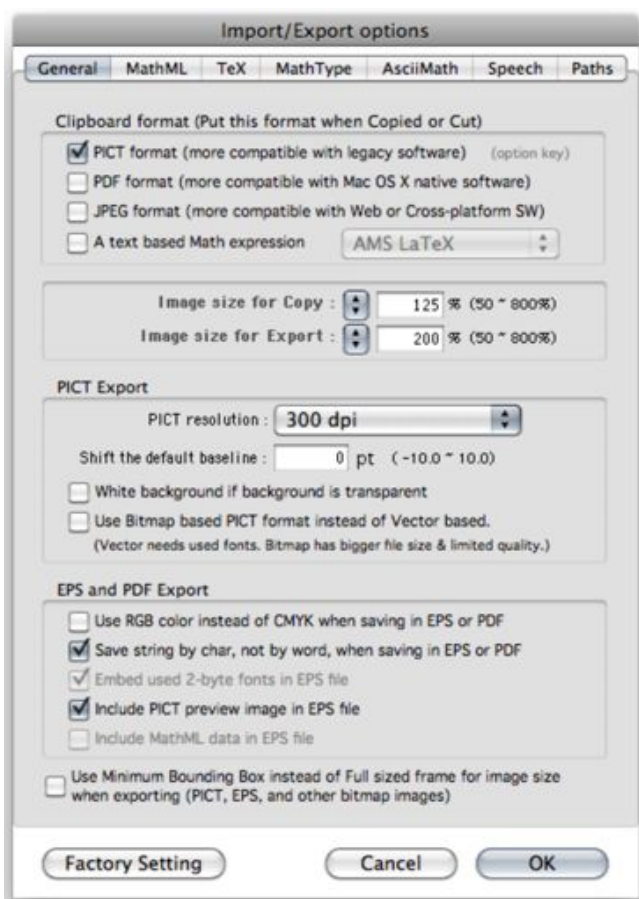
***Note:** Depending on the version of the MS Word format, and on the type of the equation contained in the Word document, equation conversion may be not supported. As there is greater compatibility between MS Word equation conversion and MathMagic for Windows, it is also possible to make the conversion attempt in MathMagic for Windows and then open the files in Macintosh, especially the original MS Word document was created with Windows version of MS Word.*

For information on using macros, please see "**VI. 2 Using Macros**".

Import/Export Options

MathMagic can read and write a variety of formats, and thus provides a one-stop place in which you can manage the settings necessary to import/read and save equations.

In the Import/Export Options dialog window below, you can specify the conversion options for each major equation format.

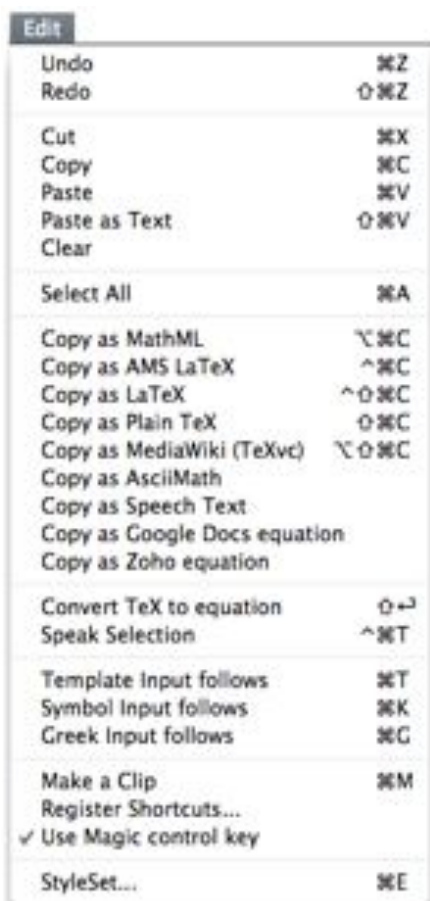


[Image 3-13] Import/Export Options dialog - General settings tab

The "**General**" tab allows you to specify the **Clipboard format**, the image size of the equation being exported out or copied into the clipboard, the resolution for PICT, and some options for EPS. There are also tabs under which you can specify options for reading and saving MathML, TeX and LaTeX, options tabs for reading MathType, AsciiMath equations, the Speech tab for reading equations out in a voice, and the "Paths" tab where you can specify the default path for batch conversion and saving files.

For more information, please see "**VI. 1. Import/Export Options**".

2.3 Edit Menu



[Image 3-14] Edit menu

The **Undo** and **Redo** commands can be run multiple times within the limitations of the memory. The number of available Undo/Redo commands is displayed on the Main Toolbar, as shown below.



With the '**Copy**' command, the copied equation can be inserted in a MathMagic document, and in other applications and documents, with the '**Paste**' command. When pasting it in another application, the equation is in PICT format by default. You can also select the PDF or the JPEG format depending on the formats supported by the application. In addition to these image formats, equations can be copied in text formats such as LaTeX. You can go to File -> Import/Export Options -> General to select one or more equation formats that will be saved on the clipboard. If multiple clipboard formats are turned on, the pasted equation format depends on the target application as each application has its own preferred format from multiple clipboard contents. If the application supports **drag & drop**, you can also drag the equation directly out of the MathMagic window. In this case, the equation will be copied only in the PICT format.

The **'Paste'** command inserts the content stored on the clipboard at the current cursor location. If there are various formats stored on the clipboard, MathMagic will paste the most preferred format. If the equation information created by MathMagic is available, MathMagic will use it first. Otherwise, MathMagic will convert any LaTeX, Plain TeX, MathML, or MathType equation information into MathMagic equation. When the clipboard only contains text formats and no equation expressions, MathMagic will paste the text. In this case, MathMagic will automatically apply appropriate styles to any numbers, variables and functions in the text, as well as eliminate any unnecessary spaces.

'Paste as Text' also applies the above equation styles when pasting. However, this command pastes the character string as-is. It is useful when the spaces need to be preserved.

MathMagic additionally offers format-specific commands such as **"Copy as MathML"**, **"Copy as LaTeX"**, etc. This is useful for someone who uses the specific format frequently. The **"Copy as Speech Text"** command converts the equation into a text of a human reading the equation out loud in English. If you are learning how to read equations, this is useful when learning the names of symbols or if you wish to listen to the pronunciation of the equation in a **Text-To-Speech** application. Instead of choosing the command from the menu, you can alternatively **right-click** (or control-click) on the selected area to bring up the contextual pop-up menu and choose the command from it.



[Image 3-15] Copy As options from Edit menu or right-button click

"Convert TeX to Equation" is used when you convert a TeX expression entered in the editing window into an equation. A user who is proficient in using TeX may prefer to enter TeX commands on the keyboard instead of finding and entering templates and symbols with a mouse. Enter the TeX beginning symbol (**backslash ('\')** or **'\$'**), enter a TeX expression, then either select **"Convert TeX to Equation"** from the menu or press **Shift-Return** to automatically convert it into an equation. If the current row does not contain a TeX beginning symbol such as a backslash ('\') or a '\$', this command is not available.

"Speak Selection" reads out the part of the equation that is currently selected. You can use an external, internet-based Text-To-Speech service instead of computer's built-in TTS function, and you can specify this in File -> Import/Export Options -> Speech tab.

Select "**Template Input follows**", or press **command-T**, and press the key that corresponds to each template to insert it. For example, pressing command-T and then 's' inserts the Sum template, and pressing command-T and then 'f' inserts the Fraction template.

Select "**Symbol Input follows**", or press **command-K**, followed by a key that corresponds to each symbol to insert it. For example, pressing command-K and then 'i' inserts the *infinity* (∞) symbol, and pressing command-K, followed by 's' key inserts the ' \therefore ' symbol.

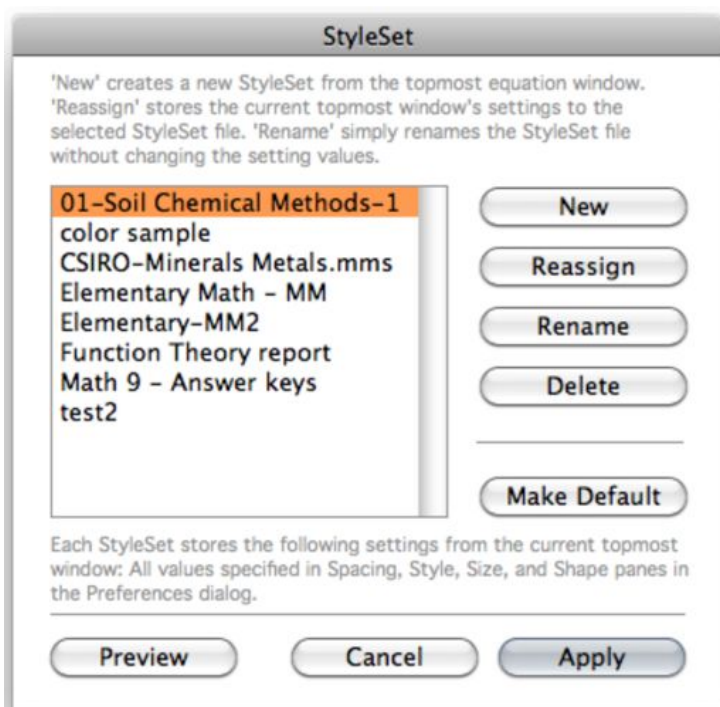
Select "**Greek Input follows**", or press **command-G**, and press an English alphabet key to insert the Greek letter that corresponds to it. For example, pressing command-G followed by 'b' inserts *beta* (β), 'w' inserts *omega* (ω), and 'D' (Shift-D) inserts *Delta* (Δ).

"**Make a Clip**" registers the currently selected area into the Clips window. Once registered, the clip can be used again later. The selected equation can also be dragged into the Clips window directly.

With the "**Register Shortcuts**" command, you can define unique shortcuts for items in the Clips window or on the User Items Toolbar. For more information, please see '**VI. Advanced Features**'.

"**Use Magic control key**" toggles the **Magic control key** option. When it is enabled, a yellow tooltip is displayed on each icon on the Palette and Symbols Toolbar upon pressing and holding the **Control** key. Pressing the *Control* key and the key displayed in the yellow **tooltip** opens up the corresponding palette. Then, release the *Control* key and press the second tooltip key to insert the corresponding item. This way, you can enter all templates and symbols without having to use the mouse and without having to memorize every shortcut combination. For more information, please see '**VI. 2. Keyboard Shortcuts**'.

With '**StyleSet...**', you can bundle the equation style, size, form, spacing, etc., specified in 'Preferences' into a single individual **StyleSet** and manage it as a file. You can prepare multiple StyleSets depending on the equation style or the editing standards and select them to quickly change to and from different work environments. For example, in a single textbook, you can have a StyleSet for the questions, one for the answer keys, and one for the explanations, to manage various editing styles with ease. All StyleSet files are stored in [*~\(user home directory\)/Documents/MathMagic User Data2/StyleSet*](#). When working with others on the same project, these files can be shared to establish identical working environments.



[Image 3-16] StyleSet management dialog

- **New:** Creates a new StyleSet. Values for the spacing, style, and sizes of the equation which are applied to the top-most Editor window are saved in the new StyleSet file.
- **Reassign:** Maintains the name of the StyleSet but applies the spacing, style, and sizes being used in the top-most Editor window to the StyleSet.
- **Rename:** Changes the name of the StyleSet that is currently selected.
- **Delete:** Deletes the StyleSet that is currently selected.
- **Make Default:** Makes the values in the selected StyleSet the default values. When a new document is created in the future, these values are applied to it as the default values.
- **Preview:** Temporarily applies the values of the selected StyleSet to the top-most Editor window.
- **Cancel:** Closes the StyleSet window without applying the values.
- **Apply:** Applies the values of the selected StyleSet to the top-most Editor window and closes dialog box.

2.4 View Menu



[Image 3-17] View menu

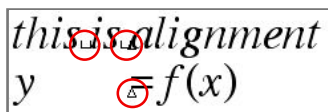
In the View menu, you can select, or specify, the view rate of the Editor window between 100% and 3,200%. 100% displays the equation in its actual size, based on the screen resolution of 72 dpi. On a monitor with higher screen resolution, the equation may look somewhat smaller than on print. The current view rate is marked with a check mark. The view rate is also displayed at the bottom-left corner of the Editor window. The **default view rate** can be changed with "**Default View Rate for Editor Window**" under the Misc tab in the Preferences dialog.

Shift-PageUp or *Shift-PageDown* changes the view rate by the increment of 100%.

'**Refresh**' re-draws the contents in the current Editor window. When editing a complex equation, afterimages may remain on the screen in a rare case. Selecting 'Refresh' removes such clutter from the screen. '**Refresh**' can be run with the the following button on the Main Toolbar.



'**Show Controls**' displays space and alignment base control characters.

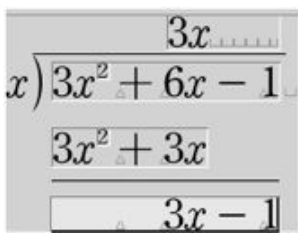


"**Show Empty Slots**" displays places on the template where values can be entered. This is an aid to identify where values can be entered because it is difficult to see where they can be entered when no values have been entered yet. The outline of the empty slots are not displayed in the final equation even if "Show Empty Slots" is on.



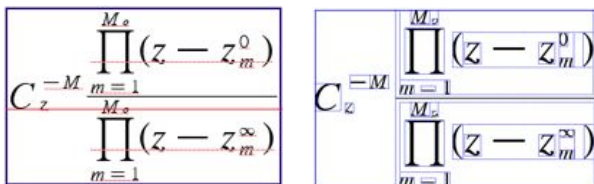
$$\int \square \square$$

"**Show Nesting Level**" is useful in identifying the extent of each section, and which template it belongs to, when editing equations. This is only an on-screen aid to help the editing process. Nesting levels are not displayed in the final equation, even if 'Show Nesting Level' is enabled.



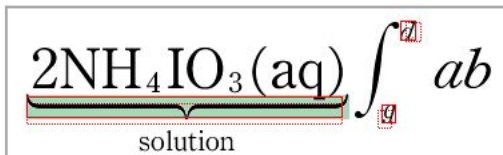
$$\begin{array}{r} 3x \\ x \overline{) 3x^2 + 6x - 1} \\ \underline{3x^2 + 3x} \\ 3x - 1 \end{array}$$

Commands such as '**Show Baselines**', '**Show Bounds**', and '**Show Center Lines**' can be used when you need to edit the equation precisely while verifying its size, gap, position, or other attributes.

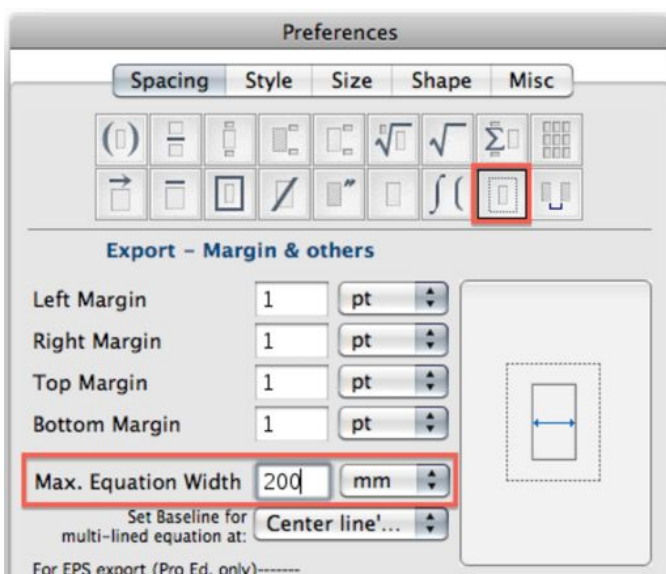


$$C_z^{-M} \prod_{m=1}^{M_0} (z - z_m^0) \prod_{m=1}^{M_\infty} (z - z_m^\infty)$$

When an element in the equation is moved precisely using the Nudge function, '**Show Nudged Parts**' shows the original standard location and where it has moved to. The original standard location is shown in dotted red lines, and the final location is shown in solid red lines.



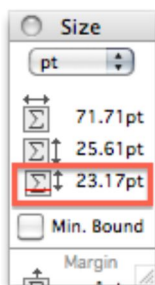
'**Show Max. Width Margin**' is only available when the "*Max. Width Margin*" value is specified in Preferences -> Spacing as shown below. If the width of the page or the paragraph of the document that is being edited is limited, specifying this value displays red margins in the Editor window. Also, if the width of the equation that is being edited exceeds this maximum value, an alert is displayed, allowing the user to be mindful of the width of the equation.



[Image 3-18] Max. Width field in Preferences -> Spacing: Export - Margin & Other tab

If '**Insert Baseline when Exporting**' is enabled, the baseline is shown in a red line in the exported equation. By displaying the baseline, you can manually align the baseline with ease when you bring the equation into a different document and edit it along with texts. For the final output, you must replace this equation with one without the baseline.

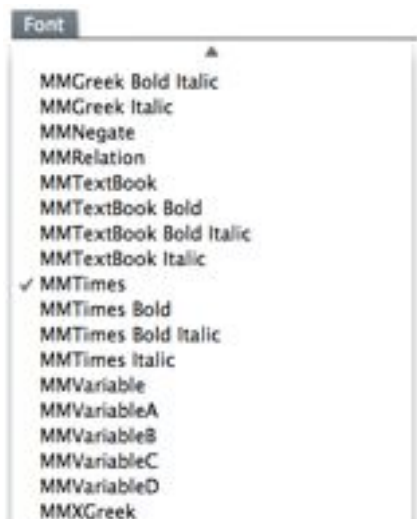
If you only wish to view the baseline value without visually verifying the baseline, you can also view it in the Size floating window as shown below.



[Image 3-19] Baseline displacement value in Size info window

Please note that MathMagic Personal Edition does not store the baseline info in EPS format.

2.5 Font Menu



[Image 3-20] Font menu

'Font' allows you to change the font of the selected equation. The new font is **only applied to the regular texts, not to the templates and symbols**. This is mainly because many MathMagic specific symbols and templates are not available from other fonts than the specially designed symbol fonts.

For regular alphanumeric characters in the equation, you can use all fonts installed on the system by default. However, if changing the font alters the shape or the meaning of the equation (such as symbols and Greek letters), MathMagic may ignore the font you have selected in preference to the basic style specified in the equation engine. For more information, please refer to Style below.

OpenType and TrueType fonts are recommended for MathMagic. When saving the equation in EPS, *bitmap and Type 1 postscript fonts are not supported in EPS format.*

2.6 Style Menu



[Image 3-21] Style menu

Math Default

'Math Default' applies the default equation style to the selected area. This is useful when ignoring the size and font information specified by the user and returning to the default style as specified in Preferences -> Style tab.

Function

'Function' applies the function style to the selected area. When entering an equation, MathMagic automatically recognizes general function names such as **sin**, **cos**, **log**, etc. and assigns the function style automatically, as specified in Preferences -> Style tab.

If MathMagic does not properly recognize a function, or if you wish you apply the function style to a selection manually, select the applicable area and apply this command. You can change the default function style under the 'Style' tab in Preferences.

Here are some of the Function names currently recognized.

Im, Pr, Re, arccos, arcsin, arctan, arg, bmod, cos, cosec, cosh, cot, coth, cov, csc, deg, det, dim, exp, gcd, glb, hom, imz, inf, injlim, int, ker, lg, lim, liminf, limsup, ln, log, max, min, mod, pmod, projlim, rez, sec, sin, sinh, sup, tan, tanh, varinjlim, varliminf, varlimsup, varprojlim

Variable

'Variable' applies the variable style to the selected area. You can change the default variable style under the 'Style' tab in Preferences.

Number

'Number' applies the number style to the selected area. You can change the default number style under the 'Style' tab in Preferences.

Text

'Text' applies the body text style to the selected area. You can change the default text style under the 'Style' tab in Preferences.

User 1 and User 2

This will apply User 1 or User 2 style to the selection. This can be customized from the Style tab of Preferences window. This is useful if there are frequently used styles for a certain tasks.

Plain

'Plain' applies the plain font style to the selected area.

Bold

'Bold' applies the bold font style to the selected area.

Italic

'Italic' applies the italic font style to the selected area.

Bold Italic

'Bold Italic' applies the bold italic font style to the selected area.

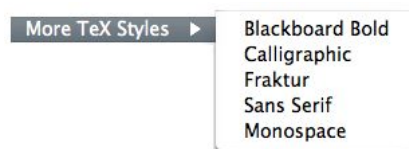
Plain/Bold Large Symbol

For large symbols used in a certain templates, such as *integral* symbols or *sigma*, you can apply the bold style by clicking on the large symbol while holding down the **Option** key and applying this command. If the symbol is already bold, you can change it to the plain style.

These symbols, built into the template itself, cannot be selected with a regular drag of the mouse. They can only be **selected with Option-click on the exact Symbol itself.**

More TeX Style

Frequently used in TeX or LaTeX, this style requires additional fonts (MMaFermat, MMaPascal, MMaFraktur) provided in MathMagic.

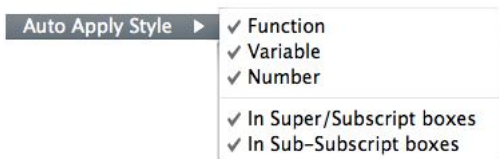


MathMagic only supports **bold** and *italic* font faces as other faces are not commonly used in equations. However, the outline-style **Blackboard** font used in equations and other fonts for LaTeX are provided in MathMagic. Please see "More TeX Style" above.

Define Styles...

This will bring up the Style tab in the Preferences dialog window.

Auto Apply Styles...

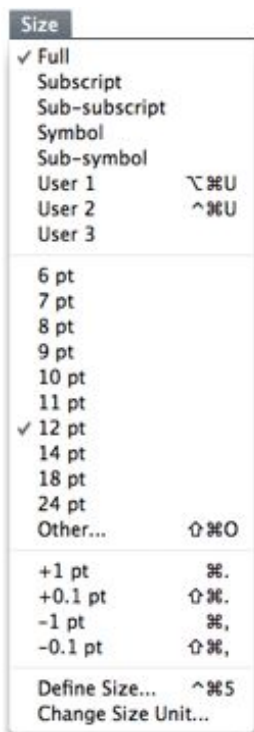


User can turn **on** or **off** the automatic style setting feature of MathMagic engine. Once turned on, MathMagic engine automatically parses the context and applies its default style as you type in. All options are turned ON by default.

If you turn off Function, for example, when you type in '**cos**', MathMagic will not change its style to Function style although it is a function name.

MathMagic Personal Edition may not support some of these options.

2.7 Size Menu



[Image 3-22] Size menu

In this menu, you can change the size of each slot in an expression to a pre-defined Full, Subscript, Sub-subscript, Symbol, Sub-Symbol, or a few other User defined sizes. You can also change pre-defined sizes under the Size tab in Preferences.

You may also specify other valued size from this menu, or increase or decrease the size by 1pt or 1/10pt. Please note that you have to first select a part before you apply a Size.

Full

'Full' applies the default size to the selected area. The default size can be specified under the Size tab in Preferences, as shown below.

Subscript, Sub-subscript

'Subscript' and 'Sub-subscript' applies the subscript or the sub-subscript size to the selected area.

Symbol, Sub-Symbol

'Symbol' and 'Sub-Symbol' applies the symbol or the sub-symbol size to the selected area.

User 1, 2, 3

With 'User' commands, you can apply the sizes you have additionally pre-defined in Preferences -> Size.

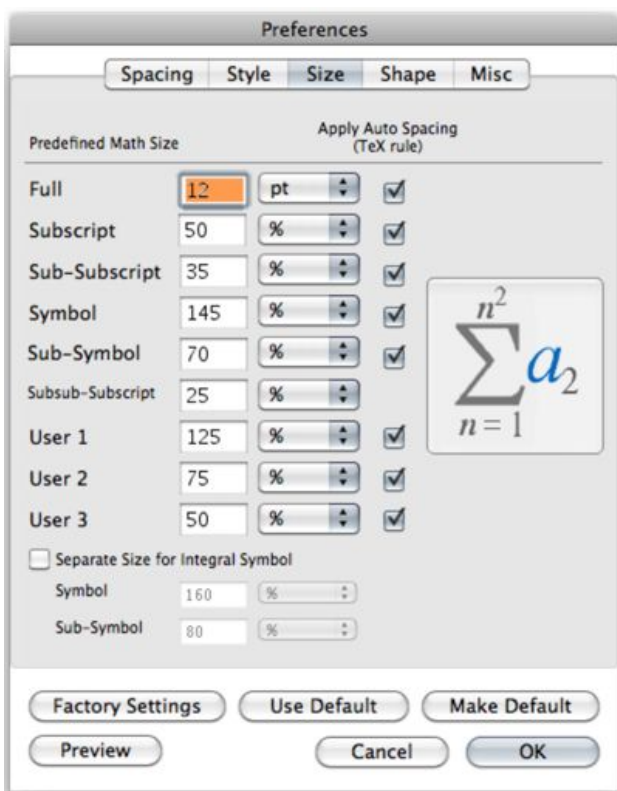
Other...

'Other' allows you to apply an exact size. The size may range from 1.000 to 127.999 and be adjusted in the increment of 0.001 point. You can also select the size unit from pt, q, mm and inch.

+1pt, +0.1pt, -1pt, -0.1pt allow you to change the currently selected font size to bigger or smaller, just from Keyboard shortcut keys. The unit can be changed to q, mm, or inch, if you change the default unit from "Change Size Unit..." dialog.

Define Size...

'Define Size' opens the Size tab in Preferences. You can change the pre-defined values according to the purpose of your editing needs.



[Image 3-23] Preferences -> Size tab

For more details, please see "*VI. 4. Advanced Features - Define Size*".

Change Size Unit...

'Change Size Unit' allows you to change the standard size unit. You can choose among **pt, q, inch and mm**. Changing the unit here changes the font size displayed in the Size menu as well as main units displayed in other places.



[Image 3-24] Change Size Unit dialog

If you choose a new size unit and the click "Make Default" button, Size menu will use the new size unit as a default unit instead of pt(point).

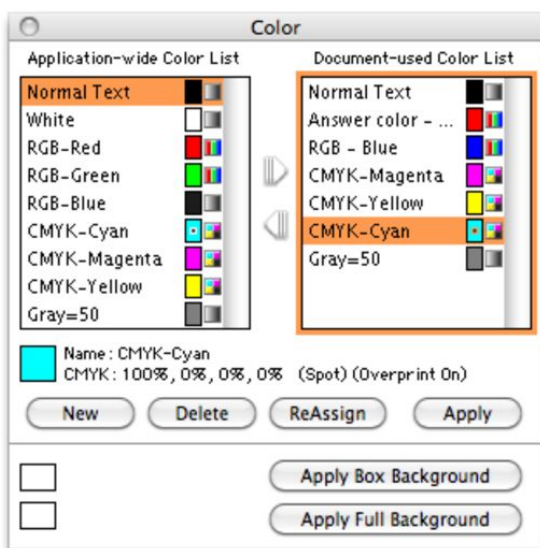
2.8 Color Menu



[Image 3-25] Color menu

With this menu, you can create a list of colors to be used in your equations. You can select a color from the Color palette and apply it to the selected area or the current cursor location.

MathMagic supports two kinds of colors: **Application-wide colors** and **Document-used colors**. You can view the names and the values of the colors in the order they were created.



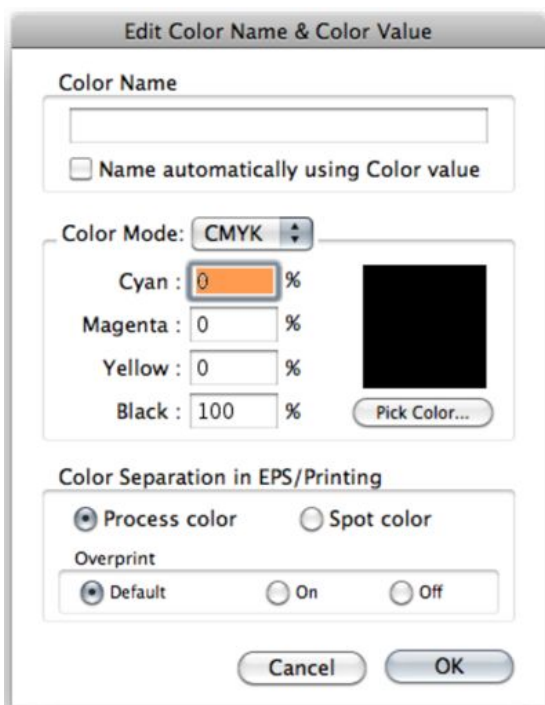
[Image 3-26] Color floating window

New Color

You can create new colors affiliated with the document that is being edited. Selecting 'New Color' brings up a color settings window as shown below. Here, you can specify the name of the color, the color model such as **RGB** and **CMYK**, the color value, and whether the colors will be **separated**, **overprinted** upon output.

You can enter the color values directly, or click '**Pick Color**' to select the desired color from the system-standard **Color Picker** window.

Note: Color names must not contain fences and commas: '(', ')', ','.



[Image 3-27] Color setting window

When a new color item is created, it is assigned to the Color menu and the Color floating window. You can select it from the list of colors to apply it to the document that is being edited.

Show/Hide Color Window

'Show/Hide Color Window' is used to display, or hide, the Color floating window. The same menu item is provided again under the Window menu.

Display Color in Gray

'Display Color in Gray' is useful when an equation created in color needs to be displayed in grayscale temporarily. In converting the color values to grayscale, MathMagic applies the standard rule of a B&W TV, providing a realistic and more accurate conversion to grayscale.

List of Colors

The colors used in the top-most document are listed at the bottom of the Color menu. The name of the color that is assigned to the current cursor location is marked with a check mark.

Normal Text is the black text color pre-defined in MathMagic.

In addition, the Application-wide Color List contains pre-defined colors, which you can delete or edit as necessary.

For easy identification and management, MathMagic allows you to name each color that you create. Once you create a color, you can either use it only in the current document, or assign it to the Application Colors to use it in other documents as well.

Also, if you wish to change a color that was already used in a document, you can simply open the corresponding color item to change the color values. The new color is applied throughout the document all at once for easy management of previous used colors. This is very useful when changing one color to another in a book that contains many colored equations.

Everything you need to manage and specify colors can be accessed through the Color floating window. For more information, please see '*VI. 9 Advanced Features - Using Colors*'.

2.9 Format Menu



[Image 3-28] Format menu

With the 'Format' menu, you can specify the alignments, row spacing, and positioning of the equation

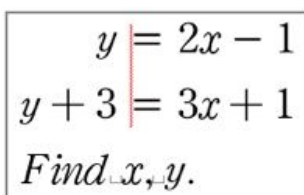
elements. Each menu item becomes available depending on the Template type and the attribute of the equation element, allowing you to easily identify which menu item is applicable.

Align Left, Align Center, Align Right

These commands determine the alignment of equations that either compose a matrix or are made up of multiple rows. The current alignment is marked with a check mark. If the equation element with the cursor is composed of a single row, Align Left/Align Center/Align Right commands are dimmed.

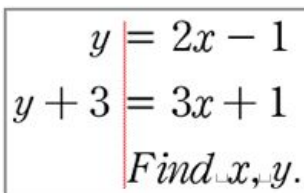
Align at = ≠ < ≤ ... (Relational Operators)

When there are relational operators in each row, such as equality signs and inequality signs, this command aligns all rows at the first relational operator. Rows with no relational operators are not aligned.



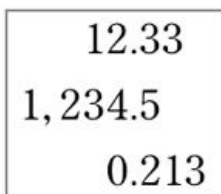
Align All Lines at = ≠ < ≤ ... (Relational Operators)

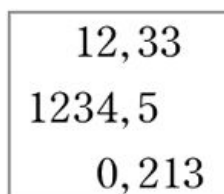
When there are relational operators in each row, such as equality signs and inequality signs, this command aligns all rows at the first relational operator. Rows with no relational operators are aligned so that the beginning of the row is aligned at the first relational operator of the rows that do contain relational operators. (See figure below)



Align at . and Align at ,

'Align at .' is mainly used to align multiple rows of numbers with decimal points. In countries where commas are used in the place of decimal points, such as in Europe, use the 'Align at ,' command.





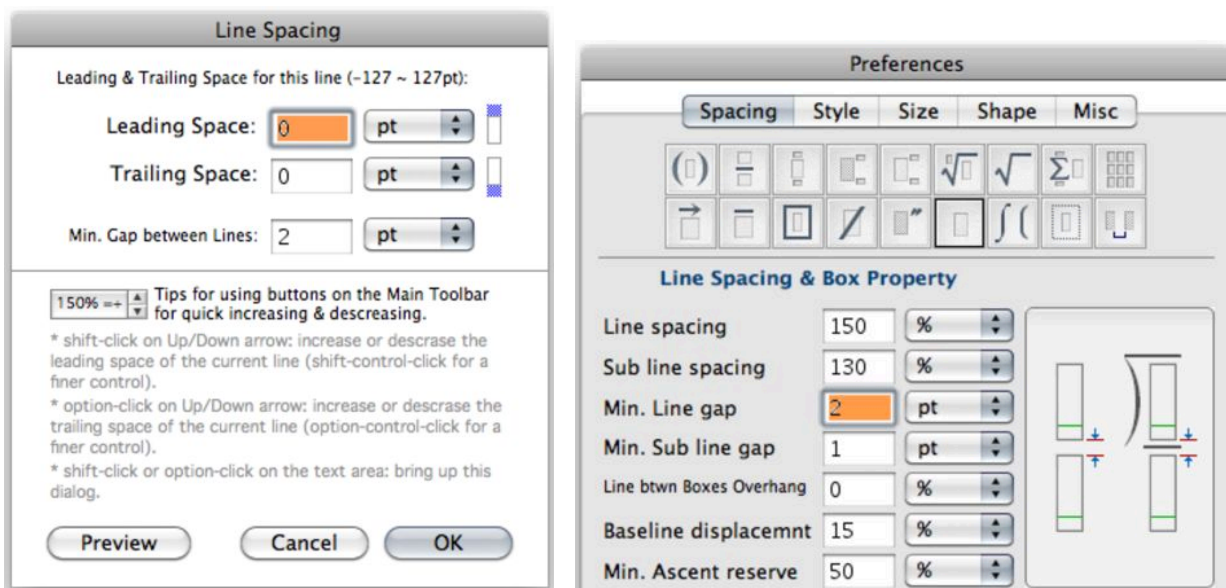
Define Spacing...

'Define Spacing...' opens the Spacing tab in Preferences dialog. For more details, please see "VI. 5. Advanced Features - Define Spacing".

Define Line Spacing for This Line...

With "Define Line Spacing for This Line...", you can define the **leading space** and the **trailing space** of the row with the cursor on it. The minimum spacing between rows follows the value specified under "Line Spacing & Box Property" in Preferences -> Spacing.

The leading space and the trailing space can range from -127 pt to 127 pt. If you set the line gap to 0 and specify a small value for the leading space, you can make two rows overlap partially or fully.



[Image 3-29] Leading & Trailing Space for the current line; Min. Line gap in Spacing dialog

Nudge

'Nudge' allows you to move the selected equation element with precision, or move the nudged elements back to their original positions. All functions available in the sub-menu can be accessed from the **Nudge floating window**, too.



[Image 3-30] Nudge sub-menu

Press the arrow keys while holding down the **Option** key to move the selection by 1 pt to the desired direction. The 1 pt is based on the current screen resolution. The selection can be moved by 1 pt whether the view rate is at 100% or at 3,200%. Nudging by 1 pt at 3,200% view rate moves the selection at approximately 2,400 dpi.

For more details on using the Nudge floating window, please read "III. 6. Nudge Floating Window and Size

Floating Window".

Line between Boxes

When creating an equation with two rows or more, you can add a horizontal line between the rows. This is useful when you are working with a vertical multiplication equation with multiple rows, a vertical division equation, or a table with horizontal lines. You can insert the line above or below the row and specify its width as well.



[Image 3-31] Line between Boxes sub-menu & Horizontal line examples

If there is already a line, the menu item changes to "**Delete Line**". The "Line Below" of the above row is the same as the "Line Above" of the current row. Whether you insert a line below the above row or insert a line above the current row, you will get the same result.

Matrix Reloaded

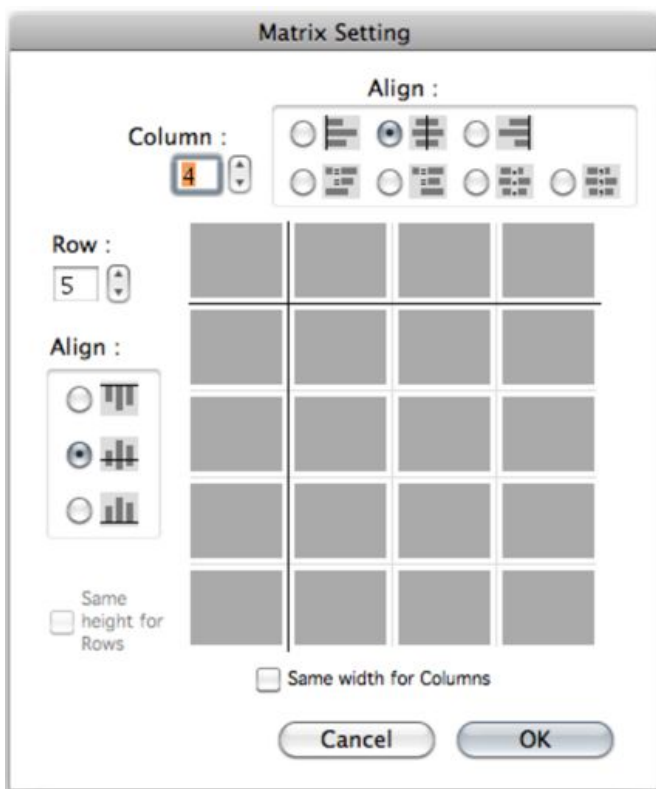
This menu is used to add or change matrices. Most of the sub-menu items are available when the cursor is inside, or directly at the right behind of, the matrix.



[Image 3-32] Matrix Reloaded sub-menu

Add Matrix, Change Matrix

Both of these two commands bring up the dialog box below where you can specify the size of the matrix. 'Add Matrix' adds a new matrix at the current cursor location, and 'Change Matrix' changes the size or the alignment of the matrix that is already present, while maintaining the equation elements in each field as much as possible.



[Image 3-33] Matrix Settings dialog

Add Row, Add Column, Delete Row, Delete Column

These commands allow you to add a row or a column adjacent to the current position of your cursor, or delete the current row or column. You can edit the matrix quickly without having to access the Matrix Setting dialog box.

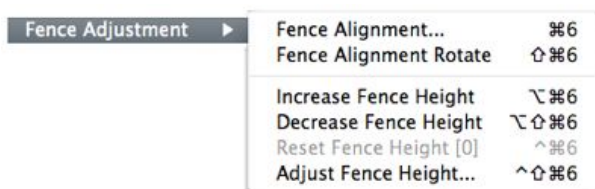
Align Top, Align Base, Align Bottom

These commands specify the alignment method of the equation elements in the matrix. The current alignment mode is marked with a check mark. For examples of Align Top, Align Base and Align Bottom, please see the figure below, where the red lines are inserted as references for your understanding.

$\frac{a}{b} \frac{\frac{1}{2}}{b-1} z-1$	$\frac{a}{b} \frac{\frac{1}{2}}{b-1} z-1$	$\frac{a}{b} \frac{\frac{1}{2}}{b-1} z-1$
---	---	---

Fence Adjustment

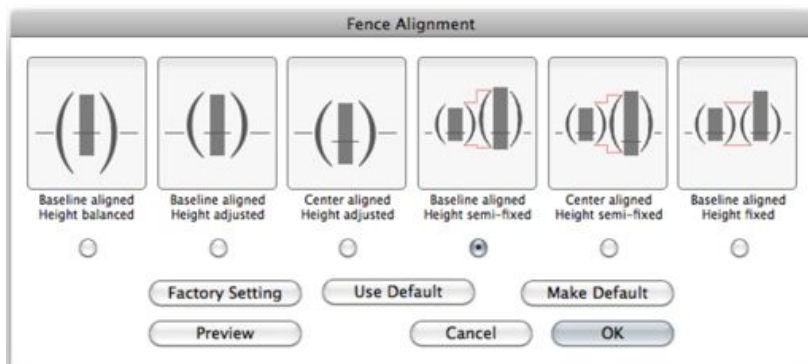
'Fence Adjustment', composed of the following sub-menu items, provides features necessary in aligning fences or in changing the height of fences. This menu item is only available when the cursor is inside, or directly at the end of, a fence template.



[Image 3-34] Fence Adjustment sub-menu

Fence Alignment

'Fence Alignment...' provides many options for aligning the fences and the contents within.



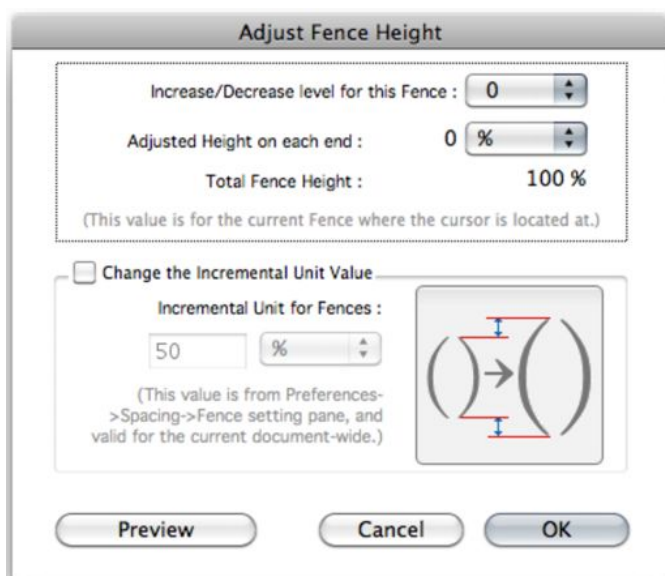
[Image 3-35] Fence Alignment options

Fence Alignment Rotate

Moving from left to right, 'Fence Alignment Rotate' cycles through the seven fence alignment options shown above without opening the above dialog box. This way, you can use the shortcut keys alone to apply the appropriate fence alignment option to the Editor window instantly, without having to access the dialog box above.

Increase/Decrease/Adjust Fence Height

Although the fence height is automatically calculated according to the size of the contents within the fences, you can use these commands to manually increase or decrease the height of the fences if the fence height that is automatically calculated does not fit well with the equation or if you have a different preference. These settings do not affect all fences but just the fences around the current location of the cursor.

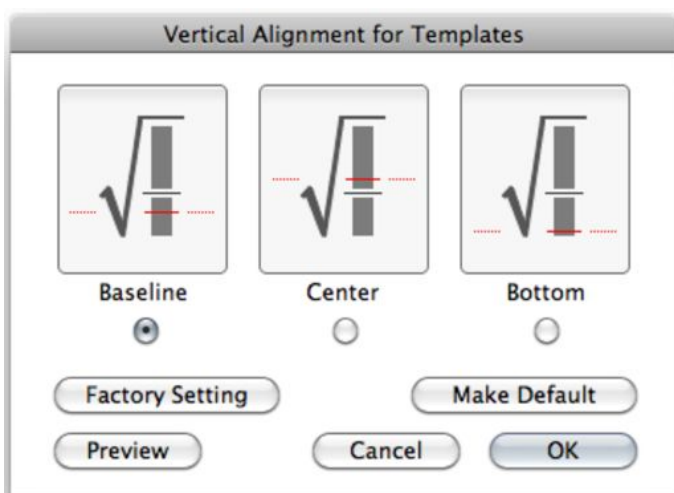


[Image 3-36] Adjust Fence Height dialog

Template Alignment..., Template Alignment Rotate

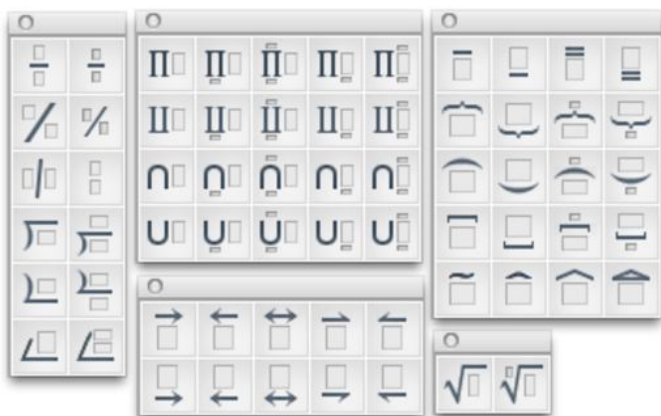
'Template Alignment...' selects the alignment mode of the items inside and outside a related template.

This menu item is only available when the cursor is inside a template box, or directly at the right behind of a related template.



[Image 3-37] Vertical Alignment options for Templates

Most of the following Templates are supported for this Template Alignment options. Future version may support more templates for the vertical alignment options.

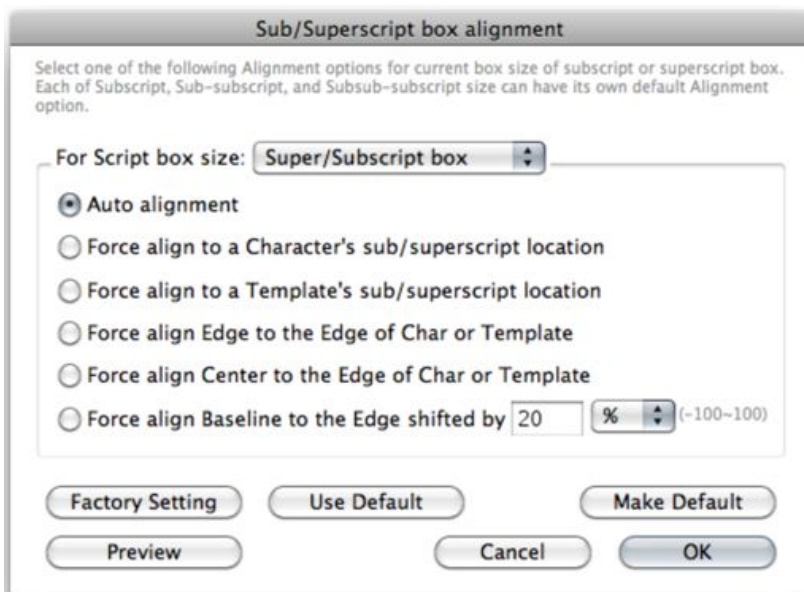


[Image 3-38] Templates supported for the Vertical Alignment options

Super/Subscript Alignment..., Super/Subscript Alignment Rotate

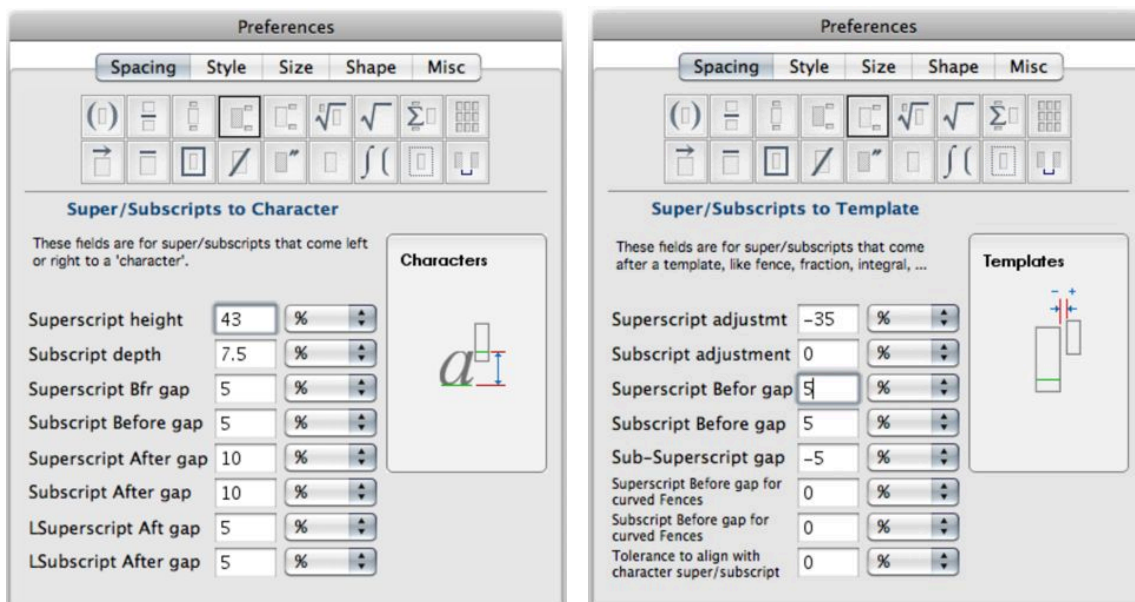
With 'Super/Subscript Alignment...', you can specify how the superscript or subscript is to be aligned in relation to the "host" character. You can use this menu item to manually adjust the superscript or subscript position that is automatically specified by MathMagic.

This menu item is only available when the cursor is inside, or directly at the right behind of, a script slot.



[Image 3-39] Sub/Superscript box alignment options

For a more precise adjustment, or to specify default values, you can pre-define them in Preferences -> Spacing, depending on whether the superscript or subscript belongs to a character or a template.



[Image 3-40] Script alignment settings for Character and Template

Large Operator Alignment..., Large Operator Alignment Rotate

This allows user to change the alignment base for the main box of some large operator templates, such as Integral, Sum, or Product: Base alignment or Center alignment.

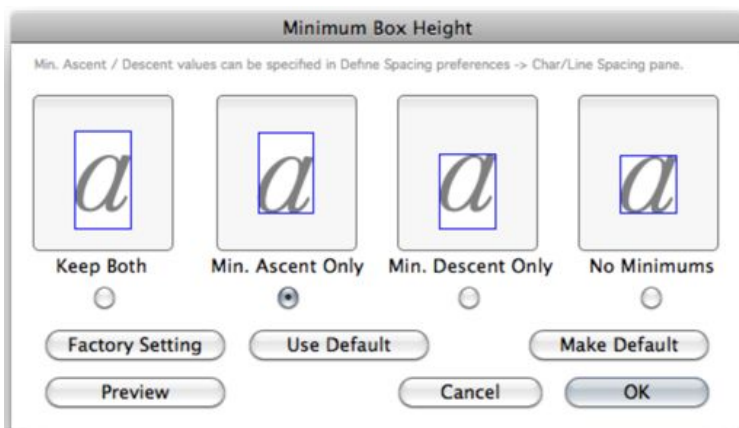


[Image 3-41] Large Operator Alignment options

Minimum Box Height...

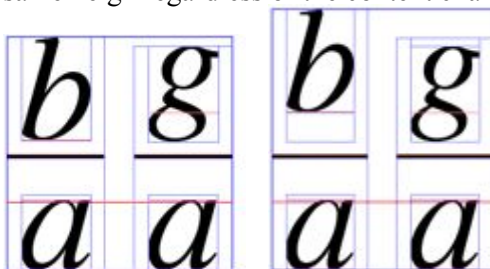
This will display a dialog box for specifying the minimum box height for the current box. .

This item will only be enabled when the current cursor is located in a Full size box, Subscript/Superscript box, or Sub-subscript box.

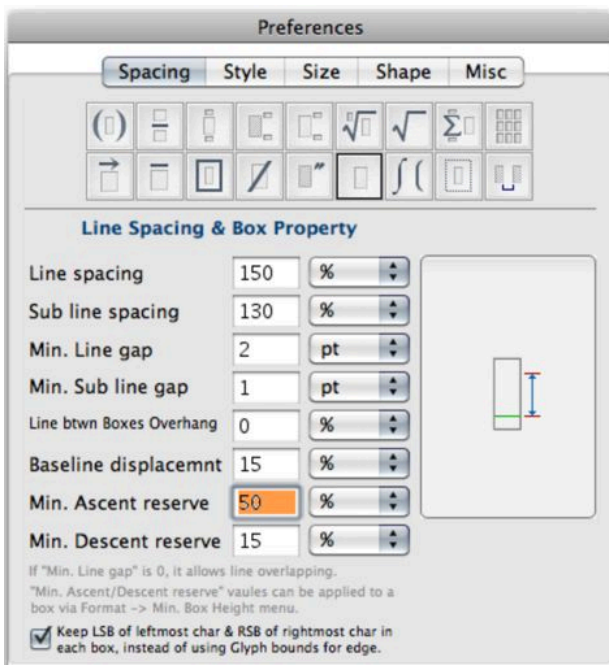


[Image 3-42] Minimum Box Height options

For a certain cases, user may want to keep the **descent height** same over multiple boxes to maintain the same height regardless of the content characters's bounding area, as shown below



This Minimum Ascent value and Minimum Descent value are specified in Define Spacing->Char/Line Spacing tab as shown below.



[Image 3-43] Min. Ascent/Descent Reserve for Box Height options

Rotate Min. Box Height

This allows user to change the current Box Height setting to the next setting without opening the above Minimum Box Height dialog, rotating the setting option to the right.

2.10 Window Menu



[Image 3-43] Window menu

The Window menu allows you to toggle various floating windows, select a Editor (document) window, and manage palettes.

With this menu, you can show or hide the Main Toolbar, the User Items Toolbar, the Clips window, and the Color window.

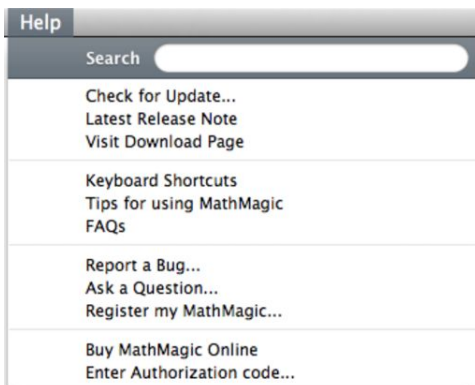
In using MathMagic, if the floating windows become scattered or not very visible, you can select "**Reset Loc of all floating windows**" to re-position all open floating windows to their recommended positions.

"**Hide all detached palettes**" temporarily hides all the Template palettes and the Symbol palettes that have been detached as independent floating windows. You can access the same menu item again to "**Show all detached palettes**". If there are so many detached floating windows that the screen becomes cluttered, or if the Editor window becomes covered, you can temporarily hide the palettes. Selecting "**Close all detached palettes**" closes all Template palette and Symbol palette floating windows at once.

When you enable "**Remember Editor window Location**" or "Remember Editor window Size", every time you open a new Editor window, MathMagic will remember and apply the location and size of the previous window to the new one. If these commands are not enabled, the location of each new window shifts slightly so as to not cover the previous window completely.

By selecting the name of the document at the bottom of the Window menu, you can select a particular document among many documents that are currently open. This is particularly useful when there are many MathMagic windows open or a window is hidden on the Mac OS X dock.

2.11 Help Menu



[Image 3-44] Help menu

Under Help menu, you can access the MathMagic website, ask questions regarding MathMagic, or register your product.

The Help menu items may vary depending on the MathMagic product and its version.

Enter Authorization Code

'Enter Authorization code' displays the following dialog window.

The contents of this window vary depending on whether this is an evaluation copy, or whether the authorization code has already been entered. If the authorization code has already been entered, certain information is displayed as ? or # for the purpose of protecting the authorization information.



[Image 3-44] Authorization dialog with a License code entered

3. Templates and Symbols

Templates come with pre-arranged input boxes and frequently used equation forms or symbols, so that the user can enter only the necessary components. As well, if a template contains symbols or lines, their length, thickness, size, etc. are automatically adjusted according to the contents in the box.

Symbols are special characters, mainly used as mathematical expressions and scientific symbols.

MathMagic supports approximately **800 widely-used symbol** characters in mathematics and science, from elementary school to the university level. Most symbols are grouped on a palette according to their association. These templates and symbols are core elements that play a critical role in creating mathematical expressions in MathMagic.

You can also **create new templates** by combining default templates and symbols. Moreover, you can enter a variety of symbols using other symbol fonts installed on the system, even if it is a symbol not provided on the MathMagic Symbol palettes.

To use templates or symbols, click the corresponding icon with the mouse.

You can also control the palettes with **Magic Control** **shortcut** combinations, which allow you to enter symbols and templates using only the keyboard.

[Shortcuts Reference]

- Move to the next item on the Template or the Symbol palette: *Control-Tab*
- Move to the previous item on the Template or the Symbol palette: *Shift-Control-Tab*
- Select a palette: *Control-number* or *alphabet* displayed in the tooltip on the toolbar
- Select an item on the palette: *Number* or *alphabet* displayed in the tooltip on the toolbar (Control is not pressed)

The **Template** and the **Symbol** palettes are toolbars displayed in two rows on the top area of all Editor windows. On the **Template palette toolbar**, you can select and use a variety of mathematical expression forms grouped together by type on separate palettes. On the **Symbol palette toolbar**, you can find mathematical and scientific symbols categorized by their type and shape.

You can click the desired item on the palette menu that pops up when you click on the toolbar. If there is a palette with frequently used items, the palette can be detached as a floating window for easier access. When the application is restarted, detached palettes are displayed again in their last positions.

If there are too many detached palettes on the screen and you wish to temporarily hide all detached windows, you can select "**Hide all detached palettes**" under the Window menu. The same menu item is then displayed as "**Show all detached palettes**". Simply select "Show all detached palettes" when you need to access the palettes again.

If you wish to close all palettes at once, you can select "**Close all detached palettes**" under the Window

menu. Alternatively, you can hold down the ***Option*** key and click the **Close** button on the title bar of the palette window to close all palette windows simultaneously.

3.1 Template Palette Toolbar

The Template palette toolbar is the first row of icons on top of the Editor window. Each template is grouped by type according to the structure and the form of the mathematical expression. You can use this palette by pressing **Control-Tab** or by clicking the corresponding template icon.



[Image 3-45] Template Palette Toolbar (upper row)

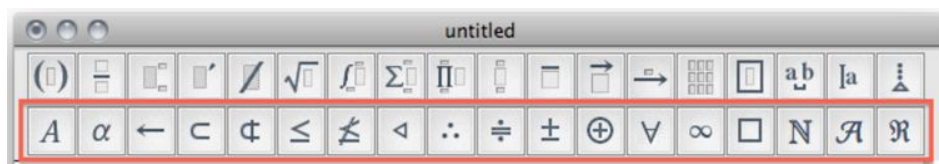
With "Use Magic control key" enabled under the Edit menu, you can hold down the **Control** key to display the shortcut information in the yellow tooltip on each template icon.



For more details on the Template palette, please see '*IV. 1. Template Palette*'.

3.2 Symbol Palette Toolbar

The Symbol palette toolbar is the second row of icons in the Editor window. The symbols are grouped by type according to the similar structure and form. You can use this palette by pressing ***Control-Tab*** or by clicking the corresponding symbol icon.



[Image 3-46] Symbol Palette Toolbar (second row)

With "Use **Magic control key**" enabled under the Edit menu, you can hold down the **Control** key to display the shortcut information in the yellow tooltip on each symbol icon.



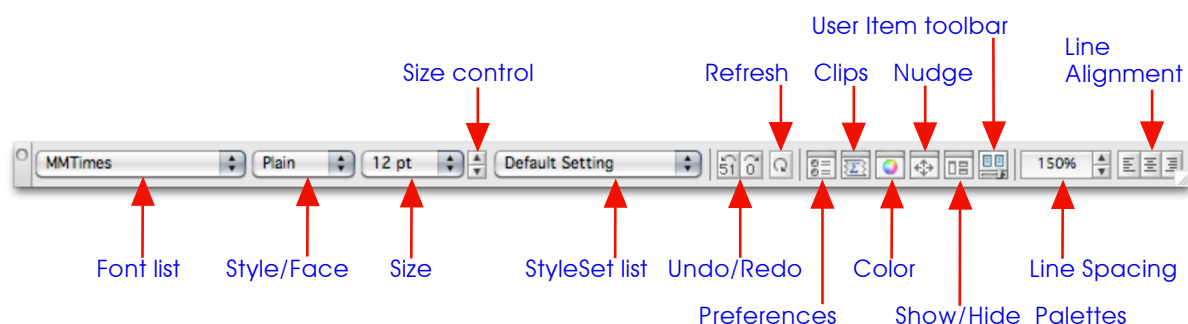
For more details, please see 'IV. 2. *Symbol Palette*'.

4. Toolbars and Clips window

4.1 Main Toolbar

The Main Toolbar contains vital items that are frequently used in creating and editing mathematical expressions. It also displays information regarding the current equation Editor window and the current cursor location.

Click and drag the resize area to the bottom right corner of the Main Toolbar to adjust the size of the toolbar window. The new size is maintained even after you exit the application.



[Image 3-47] Main Toolbar items

Fonts, Style, Size

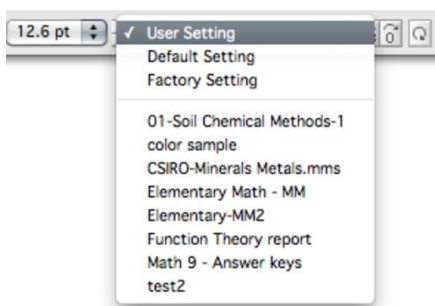
These sections display the font, style, and size information of the mathematical expression that is directly in front of the current cursor location. If there is a selection in the Editor window and the selection contains more than one font or style, the corresponding fields become blank.

To change the font, style and size of the equation, select a section in the Editor window and choose the corresponding menu item on the Main Toolbar.

The up and down arrows to the right of the Size pop-up menu allow you to increase or decrease the size by the **increment of 1 pt**. You can also hold down the **Control** key when clicking these buttons to increase or decrease the size by increments of **0.1 pt**.

StyleSet

The StyleSet pop-up menu displays the current StyleSet (spacing, style, size, shape, etc.) that has been applied to the current Editor window. If the StyleSet matches a preset StyleSet, the corresponding preset is marked with a check mark. Otherwise, the StyleSet is displayed as 'User Setting'.



[Image 3-48] StyleSet pop-up menu

You can select a StyleSet from the StyleSet pop-up menu to apply the values saved in the StyleSet to the entire Editor window. In editing a book, for example, you can create a variety of fonts, sizes, equations shapes, etc. simply by creating several StyleSets and applying them.

For instructions on how to create StyleSets, see "2.3 Edit -> StyleSet".

Line Alignment

The alignment options at the far right of the Main Toolbar are only available when the equation being edited has two or more rows. With these options, you can align the equation to the left, to the center, or to the right.



These options are available under the Format menu as well. If you wish to access other alignment options, you can access the Format menu, as the Format menu provides more alignment options.



[Image 3-49] More Alignment options from Format menu

4.2 User Item Toolbar

You can register frequently used templates and symbols to the User Items Toolbar for quick input. The User Items Toolbar can be placed anywhere on the screen as a floating window, and shortcut keys are available for quick access.

You can **Show/Hide the User Items Toolbar** from the Main Toolbar or from the Window menu.



You can select items assigned on the User Items Toolbar with **Control-Shift** or with a click of the mouse. While Control-Shift is pressed down, the **shortcut tooltip** appears on each item, as shown below.



Assigning Items on the User Items Toolbar

To add items on the User Items Toolbar, click the desired item on the Template palette or the Symbol palette while holding down the **Command** key.

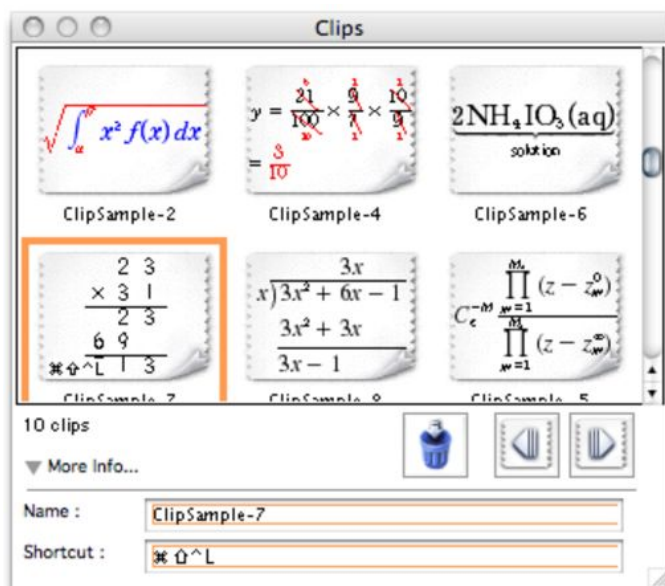
Deleting Items from the User Items Toolbar

To delete an item from the User Items Toolbar, click the item on the User Item Toolbar while holding down the **Command** key.

Changing the Order of Items on the User Items Toolbar

To change the order of the items assigned on the User Items Toolbar, drag & drop the items to the desired location.

4.3 Clips window



[Image 3-50] Resizable Clips window

You can enter mathematical expressions quickly using the Clips window. Double-click a mathematical expression in the Clips window or drag one into the Editor window to insert it at the current cursor location.

This way, frequently used mathematical expressions can be accessed quickly when they are saved as clips. You can also assign a **shortcut** to any clip. To assign a shortcut to a clip, select the clip, and click the triangle icon at the bottom of the Clips window to unfold the "**More Info**" input section and assign the desired shortcut key combination. Alternatively, you can assign shortcuts to clips by accessing "**Register Shortcuts**" under the Edit menu.

To add a clip to the Clips window, select the applicable section on the equation and press **Command-M**. You can also add a clip by dragging the selection to the Clips window. To delete a clip, select the applicable clip and click the trash can button below. Please be cautious - once deleted, the clip cannot be restored.

When a clip is added to the Clips window, it is placed at the end of the list of clips. If you wish to move frequently used items to the front, or if you wish to change the order of the clips, select the applicable clip and click the **Left** or **Right** arrow buttons to the right of the trash can. The clip will move one step at a time with each click.

You can **show/hide the Clips** window from the Main Toolbar or from the Window menu.

5. Nudge window and Size window

5.1 Nudge Floating Window

The Nudge floating window allows you to move the selected mathematical expressions with precision and modify the equation to your preference. You can also enter movement values manually (up & down or left & right) for the selected mathematical expressions.

The center button restores the selection to its original location.



[Image 3-51] Nudge window

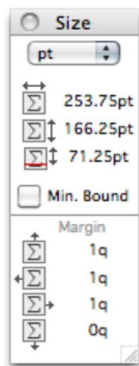
You can **Show/Hide the Nudge** floating window from the Window menu or from the Main Toolbar.

You can nudge the selection from the Nudge sub-menu under the Format menu, or, alternatively, you can use the **arrow keys** while holding down the **Option** key.

5.2 Size Floating Window

The Size floating window displays the width, the height, and the baseline position, of the current top-most document. It also displays the margins added around the equation when it is saved. These margins are specified in Preferences -> Spacing.

You can increase or decrease the size of the window by using the resize button in the bottom right corner of the floating window.



[Image 3-52] Size floating window

The **unit pop-up menu** at the top of the Size floating window allows you to instantly verify the size information in different units: pt, q, inch, mm.

Checking the '*Minimum Bounding Box*' checkbox shows the minimum size of the applicable character or the image in the mathematical expression, disregarding the Left Side Bearing (LSB), the Right Side Bearing (RSB), ascent and descent.

Margin values are specified in the Define Spacing dialog -> Margin tab.

Size information is useful especially when you'd like to know the exact size of the equation before you place it in your InDesign or QuarkXPress documents.

You can show/hide the Size floating window from the Window menu or from the Main Toolbar.

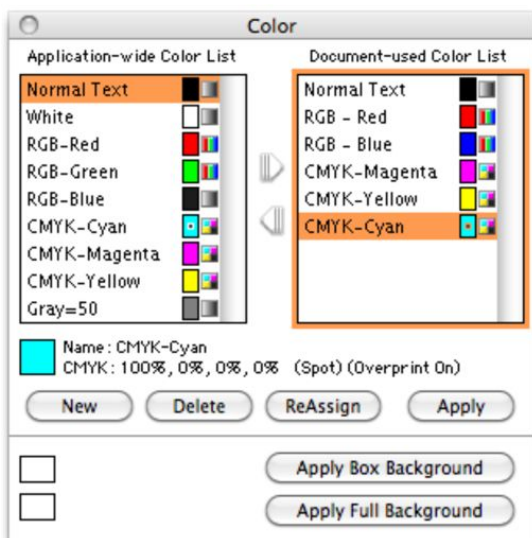
6. Color Window

The **Color floating window** allows you to create and manage a list of colors that will be used in MathMagic equation documents. It also provides an interface by which you can apply the desired color to the equation.

You can select the '**Show/Hide Color Window**' command from the Color menu or the Window menu to display or hide the floating window. Alternatively, you can click the following button on the Main Toolbar.




When you select "Show Color Window", the following Color window is displayed.

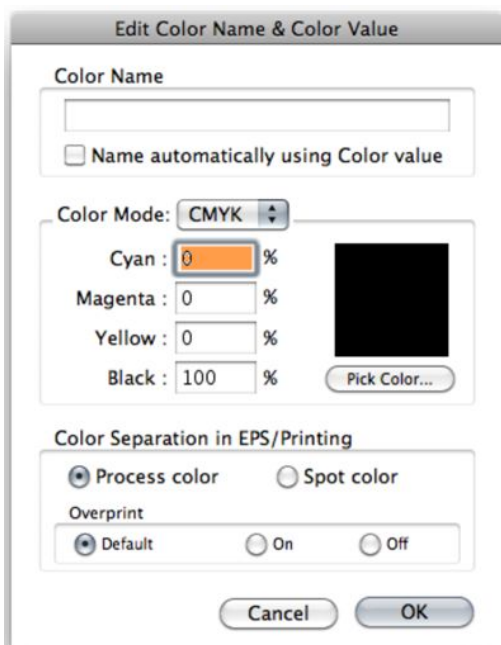


[Image 3-53] Color floating window

There are two sets of colors in the Color window. To the left is the "**Application-wide Colors**" which can be used across all documents edited in MathMagic, and to the right is the "**Document-used Colors**" which are assigned to the current top-most document and can only be used in that document.

By clicking the left/right arrows (), you can move colors listed under "Application-wide Colors" to

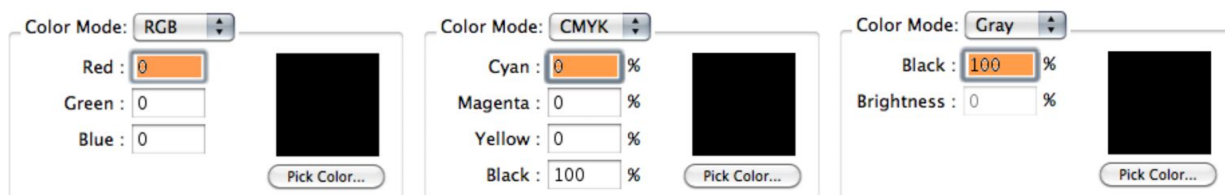
"Document-used Colors", or vice-versa, so that the document colors can be used in other documents. You can create and assign a new color by clicking "**New**". This brings up the following dialog box:



[Image 3-54] New Color window

You can assign a name to the color in "Color Name". The name cannot contain a ceretain characters such as ', '(', and ')'. (*Commas and fences*)

Under "Color Mode", you can select **RGB**, **CMYK**, or **Grayscale**. Each selection displays a set of fields to enter the color values manually, as shown below.



[Image 3-55] Color Modes and Value Input fields

In the case of RGB and CMYK, you can assign **Spot colors for color separations** when exporting to EPS. You can also specify overprinting for a particular color for clearer printing depending on the background color of the output material.

When you return to the Color floating window, you can click "**Reassign**" to modify the color name, the color value, and spot colors. Once modified, the change is applied to all areas in the document that use the corresponding color.

You can click "**Delete**" to delete the colors from the list one by one. However, if the color to be deleted is currently being used in some places in the document, it will not be deleted. In this case, you can apply a different color to the places to which the color in question has been applied, and then delete the color.

Clicking "**Apply**" applies the selected color to the selection in the Editor window. If there is no selection in the document, the selected color is applied to the current cursor location, applying the color to the mathematical expression that is inserted there. You can also apply the color to the equation by **double-clicking the color name** from the list.

Background Colors

Clicking the "**Apply Box Background**" applies the color selected from the list to the box that contains the cursor. This color is not applied to equation characters, symbols or lines, but to the entire box as its background color. As such, only one background color can be assigned to one box. If the cursor is placed in a box to which a background color is already assigned, the button changes to "**Remove Box Background**".

If an equation has only one box and a background color is assigned to the box, it may look like the color has been applied to the entire equation. However, if the equation margin is specified, the background color is not applied to the margins. To achieve the desired result, you must use "**Apply Full Background**" below "Apply Box Background".

If you wish to apply a background color only to a certain section of a box, you can separate the line by inserting a new input box template.



$$y = 3x^2 + 6x - 1 \quad (\text{applying a different background color in the same line})$$

Clicking "Apply Full Background" applies the color selected from the list to the entire equation document as its background color. This color is not applied to equation characters, symbols or lines, but to the entire box as its background color. As such, only one background color can be assigned to one box. If a color is already assigned to the entire equation, the button changes to **"Remove Full Background"**.

Sharing Colors

The list of colors assigned to the "Application-wide Colors" in the Color window is saved in the following location:

~(user home directly)/Documents/MathMagic User Data2/Color/UserDefaultColor

So, when editing a book, for example, you can first create a list of colors to be used throughout the project, and then copy and share the above color profile with others to maintain uniformity among project workers.

7. Using Keyboard Shortcuts

InfoLogic focuses much research on the interface so that users can do as much work as possible using only the keyboard. MathMagic provides a variety of shortcut key options, including methods exclusive to MathMagic as well as the OS standard shortcut interface.

The following shortcuts are available:

- **Menu item shortcuts**
- **Magic control keys**
- **Single-step shortcuts for major templates**
- **Double-step shortcuts for entering templates, symbols and Greek characters**
- **User-defined shortcuts**
- **Keys for editing**

7.1 Menu Item Shortcuts

MathMagic has preset shortcut keys for menu items that are frequently used. Shortcut keys are assigned in such a way that it is consistent with the Mac OS X shortcut interface, so that the users can use MathMagic quickly.

The following are frequently used major shortcut keys. For more information on menu item shortcuts, please see **"III. 2. Menu"**.

File menu

cmd-N:	New editor window
cmd-O:	Open a file

cmd-W:	Close window(Close all windows, if closed with Option key)
cmd-S:	Save
cmd-shift-S:	Save As
cmd-option-E:	Export in EPS (Personal Edition in PICT)
cmd-shift-E:	Import/Export Options dialog

Edit menu

cmd-Z:	Undo
cmd-shift-Z:	Redo
cmd-C:	Copy
cmd-shift-C:	Copy as TeX
cmd-V:	Paste
cmd-shift-V:	Paste as Text
shift-return:	Convert TeX to equation
cmd-ctrl-T:	Math To Speech (TTS)
cmd-T:	Tell MathMagic that a Template shortcut key follows
cmd-K:	Tell MathMagic that a Symbol shortcut key follows
cmd-G:	Tell MathMagic that a Greek key follows
cmd-M:	Make a Clip from the selection
cmd-E:	StyleSet dialog

View menu

cmd-1:	View Editor window in 100%
cmd-2:	View Editor window in 200%
cmd-3:	View Editor window in 300%
cmd-4:	View Editor window in 400%
cmd-option-1:	Decrease View rate by 100%
cmd-option-2:	Increase View rate by 100%
cmd-option-3:	Increase View rate by 10%
cmd-option-4:	Increase View rate by 1%
cmd-D:	Redraw screen
cmd-Y:	Show/Hid Controls

Style menu

cmd-shift-D:	Revert to Math Default style for selection
cmd-option-F:	Apply Function style for selection
cmd-option-V:	Apply Variable style for selection
cmd-U:	Apply User1 style for selection
cmd-shift-T:	Apply Plain face for selection
cmd-shift-B:	Apply Bold face for selection
cmd-shift-I:	Apply Italic face for selection

Format menu

cmd-option-L:	Left Align
cmd-option-J:	Center Align
cmd-option-R:	Right Align
cmd-ctrl-=:	Align to the first Relational Operator
cmd-5:	Preferences dialog - Spacing tab (Define Spacing)
cmd-shift-5:	Preferences dialog - Style tab (Define Style)
cmd-ctrl-5:	Preferences dialog - Size tab (Define Size)
option-left arrow:	Nudge selection to the left
option-right arrow:	Nudge selection to the right
option-up arrow:	Nudge selection to the top
option-down arrow:	Nudge selection to the bottom
cmd-=:	Add Line Above
cmd-shift-=:	Add Line Below

7.2 Magic Control Shortcuts (Quick Shortcuts)

Magic Control shortcuts are a shortcut method **exclusive** to MathMagic which is activated upon pressing **Control** key. It is also called "**Quick Shortcuts**" because all Template and Symbol palette items can be accessed quickly through the 2-level key interface.

Magic controls are only available when "**Use Magic control key**" is enabled under the Edit menu.

As shown below, pressing the **Control** key displays **yellow tooltips** on the Template and the Symbols toolbar. With Magic controls, you have no need to memorize individual shortcuts.



[Image 3-56] Yellow Tooltips when **control** key pressed (Magic Control interface)

Press the key that is assigned to the palette, while holding down the Control key, to bring up the corresponding pulldown palette. If you happen to have the wrong palette, you can press other shortcut keys with the Control key pressed down to view other pulldown palettes.

Alternatively, you can press **Control-Tab** to move on to the next palette, or press **Control-Shift-Tab** to go back to the previous palette.

When you have the desired palette, **release the Control key** to display yellow tooltips on the icons in the pulldown palette. For example, if you press 8 while holding down the Control key, and then release the Control key, you will see the following screen:



At this point, you can press the corresponding key, without holding down the Control key, to insert the item and close the pulldown palette.

With the Magic control shortcut method, you can insert any palette item only with the keyboard without having to memorize each individual shortcut.

Note: In order to use Magic control shortcuts (Quick Shortcuts), the keyboard layout must be set to the Roman script.

7.3 Single-Step Shortcuts for Major Templates

In order to help access equation templates that are frequently used, MathMagic provides shortcuts which

allow you to enter mathematical expressions with a single combination keystroke with the **Command** key. For instance, the following pre-defined single-step shortcuts are available for entering templates:

cmd-L:	Subscript
cmd-shift-H:	Superscript
cmd-J:	Sub-Superscript
cmd-F:	Fraction
cmd-R:	Square Root
cmd-shift-R:	Root Of
cmd-I:	Integral
cmd-':	Prime
cmd-shift-':	Double Prime
cmd-9, cmd-0:	Fence

For more comprehensive listing, please see the Template Shortcut List in the Appendix section.



























7.4 Two-Step Shortcuts for Entering Templates, Symbols and Greek Characters

Compared to the number of templates, symbols and Greek characters available in MathMagic, the number of keyboard shortcut combinations is limited. To address this issue, MathMagic provides two-step keyboard shortcuts in order to help you enter characters using only the keyboard as much as possible. This feature is supported by "**Template Input follows (Cmd-T)**", "**Symbol Input follows (Cmd-K)**", and "**Greek Input follows (Cmd-G)**" under the Edit menu.

For example, pressing **Cmd-T** prepares the system for a template input. You can then press 'a' to insert a Vector template with an arrow. Or, pressing Cmd-T and then 'd' inserts a division template.

In the case of symbols, pressing **Cmd-K** prepares the system for a symbol input. You can then press '-' to input a symbol. Or, pressing Cmd-T and then 'i' inserts the infinity (∞) symbol.

The following is a list of double-step shortcuts for entering symbols:

	cmd-K, C		cmd-K, <		cmd-K, -		cmd-K, A
	cmd-K, shift-C		cmd-K, >		cmd-K, shift- -		cmd-K, shift-A
	cmd-K, E		cmd-K, shift-<		cmd-K, T		cmd-K, D
	cmd-K, shift-E		cmd-K, shift->		cmd-K, shift-T		cmd-K, shift-D
	cmd-K, U		cmd-K, =		cmd-K, S		cmd-K, O
	cmd-K, shift-U		cmd-K, shift- =		cmd-K, shift-S		cmd-K, shift-O
							cmd-K, I
							cmd-K, shift-I

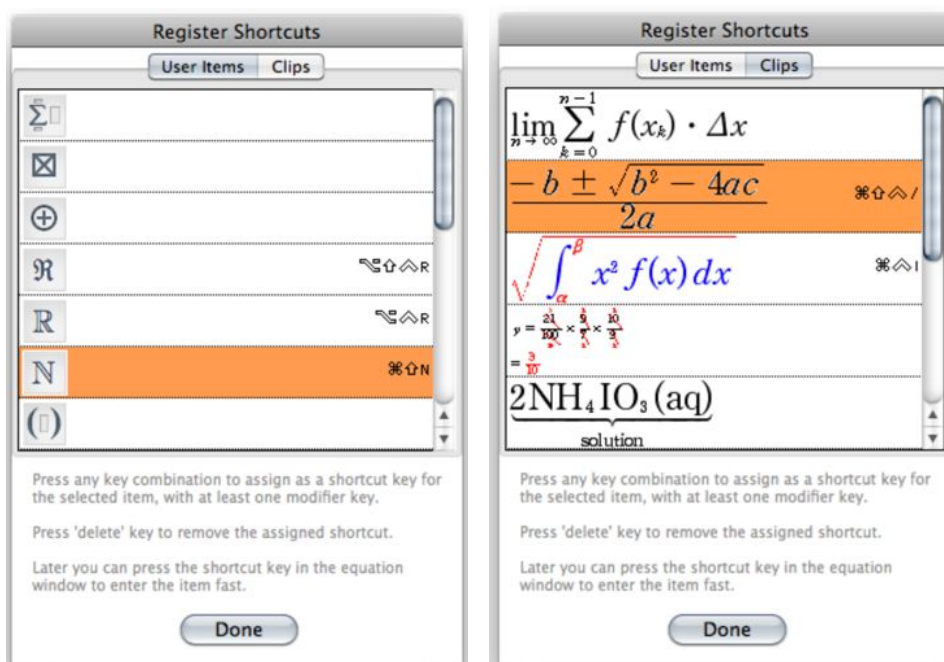
In the case of Greek characters, pressing **Cmd-G** prepares the system for a Greek character input. You can then press 'b' to enter a beta (β). Most Greek letters are connected to the corresponding upper case and lower case Roman script keys, such as 'p' for pi (π) and 'w' for omega (ω).

For more comprehensive listing of the three types of shortcuts shown above, please read "*Appendix 1. Shortcuts*".

7.5 User-Defined Shortcuts

MathMagic allows the user to define shortcuts for user-defined items on the **User Items Toolbar** and the equation clips in the **Clips window** (a.k.a macro).

Select "**Register Shortcuts**" from Edit menu to bring up the following dialog box. Select the item to which you wish to assign a shortcut. Then, press the key combination on the keyboard to assign it. If the key combination is already in use elsewhere, a warning message is displayed. You can then simply try another combination.



7.6 Keys for Editing

The general editing keys, such as arrow keys, shift-arrow combinations, PageUp / PageDown, and Home / End, can be used in the Editor window to move the cursor or select and edit mathematical expressions.

Keyboard

shift-click

option-click

Behavior

If you click the mouse while holding down shift key, it selects the contents between the previous cursor location and the clicked point. This works on multiple lines.

If you click the mouse while holding down option key, it selects the contents from the beginning of the box to the clicked point. If clicked on a fence, integral symbol, root template, accent, fraction line, or any large symbol or variable symbol, MathMaigc selects the component. Then, Nudge and Color can be

applied to the selection.

right arrow	Move cursor to the right At the end of a template box, move to the beginning of the next box
left arrow	Move cursor to the left At the beginning of a box, move to the end of previous box
down arrow	Move to the nearest point of the next line
up arrow	Move to the nearest point of the previous line
cmd-right arrow	Move to the end of the line
cmd-left arrow	Move to the beginning of the line
cmd-down arrow	Move to the end of the document
cmd-up arrow	Move to the beginning of the document
shift-right arrow	Move cursor to the right, and select in-between contents
shift-left arrow	Move cursor to the left, and select in-between contents
shift-down arrow	Move to the same point of the next line, and select in-between contents
shift-up arrow	Move to the same point of the previous line, and select in-between contents
shift-cmd-right arrow	Move to the end of the line, and select in-between contents
shift-cmd-left arrow	Move to the beginning of the line, and select in-between contents
shift-cmd-down arrow	Move to the end of the document, and select in-between contents
shift-cmd-up arrow	Move to the beginning of the document, and select in-between contents
option-right arrow	Nudge(move) the current selection to the right 1-point of the current view
option-left arrow	Nudge(move) the current selection to the left 1-point of the current view
option-down arrow	Nudge(move) the current selection to the down 1-point of the current view
option-up arrow	Nudge(move) the current selection to the up 1-point of the current view
home	Move cursor to the beginning of the current box or line
end	Move cursor to the end of the current box or line
cmd-home	Move cursor to the beginning of the document
cmd-end	Move cursor to the end of the document
tab	Move cursor to the end of current box At the end of a box, move to the beginning of the next box
shift-tab	Move cursor to the beginning of current box At the beginning of a box, move to the end of the previous box
return, enter	Add a new line at the same level of current line In the middle of a box, breaks the line and move the right part to the next line
shift-return	Convert the TeX expression in the current line into equation, if any TeX expression found.
backspace (backward)	Delete the left character of the cursor If it is a template, select the box first and then delete it by another delete key
delete (forward delete)	Delete the right-side character of the cursor If it is a template box, just select the box
control	Display Magic shortcut key tool tips for Templates and Symbols palette, and User Item toolbar. This is enabled when Edit -> User Magic control key is checked.

Shortcut keys and editing keys are subject to change without prior notice for the purpose of software improvement.

8. Import & Export

When a file is saved through the **Save** command under the File menu, equation documents created in MathMagic are saved in the MathMagic native format in order to maintain the precise equation information.

This MathMagic native format comes with the extension, **.mmf**. The contents of this format are flexible. It is text-based like MathML and LaTeX, allowing you to change the extension to .txt to view or edit the contents, or save them in a DB easily, if necessary.

(Please direct all inquiries regarding the MathMagic file format license to sales@mathmagic.com.)

8.1 Export

For compatibility with other applications and documents in mathematical expression data, MathMagic supports a variety of formats in which to save files.

- **General-Purpose Image Formats:** PICT, EPS, PDF, PNG, JPEG, GIF, TIFF
- **Mathematical Expressions Format:** LaTeX, MathML, Plain TeX, Wiki TeX, AsciiMath, AsciiMathML
- **Other Modified Formats:** Text-To-Speech (Math-To-Speech), Google Docs, Zoho, URL TeX

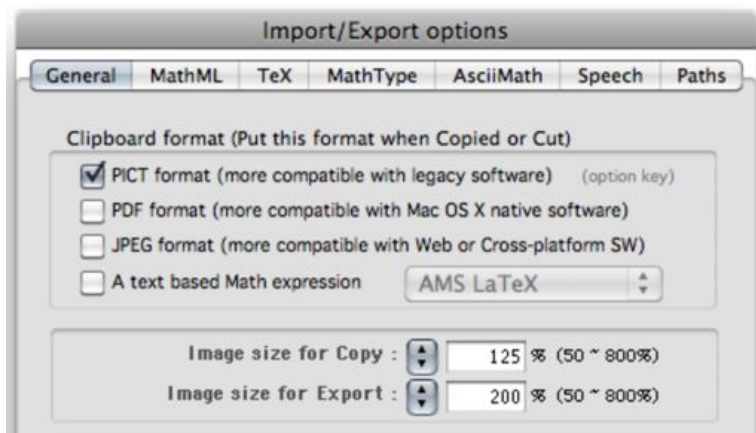
Font embedding for PDF format is supported on Mac OS X 10.6 or newer. Mac OS X 10.4 and 10.5 do not support font embedding. In this case, Adobe Distiller or 3rd party utilities can be used to embed fonts. If you wish to save the file in one of the above formats to use the equation in another application or document, go to File -> Export and select the format you want.



Most of the formats above also save the MathMagic native data to allow the files to be edited again later in

MathMagic. If the files are to be accessed mainly with MathMagic in the future, saving the files in the MathMagic format (.mmf) or as clips in the Clips window will be more convenient and space-efficient.

Alternatively, you can use the clipboard to move the equation to another application. While the format of the equation saved on the clipboard is PICT by default, you can also go to File -> Import/Export Options and select the format under 'Clipboard format'.



Also, the image size of equations to be exported or saved on the clipboard can be set to 50% ~ 800% in the above dialog box, by 1% increment.

8.2 Import

When a file is saved in MathMagic, the MathMagic native equation data is also embeded in the following formats. This allows the equation to be displayed and edited again if the file is later re-opened in MathMagic.

- File formats that embed MathMagic native data: **PICT, EPS, PDF, PNG, JPEG, GIF, MathML, LaTeX, WMF** (Windows Meta File)

However, if the equation is edited in another application and saved there, the MathMagic-exclusive data may be erased, in which case you may not be able to edit the equation again in MathMagic. Therefore, if there is a need to edit the equation in MathMagic in the future, it is recommended that you create a backup copy of the original file.

Even without the MathMagic native data included, the following equation files can be imported:

- File formats that MathMagic can open or import: **MathML, LaTeX, Plain TeX, AsciiMath, Wiki TeX, Google Docs(LaTeX), Zoho(LaTeX), TTS text, MathType, MS Equation Editor/MS Word Equation**

However, please note that the imported result may not be same as the original. Some equations or symbols

may not be imported.

You can import equation files in the following ways:

- **Go to File -> Open and open the file directly**
- **Drag the file directly onto the MathMagic application icon, or**
- **Drag the equation contained in a document or on a webpage (such as a Wiki website page) directly onto the MathMagic Editor window**
- **Paste the format copied into the clipboard directly onto the MathMagic Editor window (LaTeX, Plain TeX, MathML, AsciiMath, MathType, MathMagic equations)**

If a certain symbols or the style of the converted equation are not displayed correctly after importing, selecting the entire equation and applying the '**Math Default**' style under the **Style** menu may improve the quality.

Import/Export settings can be specified in **File -> Import/Export Options**.

For more details, please read "*VI. 1. Import/Export Options*".

9. Printing

MathMagic only offers the basic printing features for the current Editor window.

MathMagic has been developed focusing on the interface by which user can quickly and easily create equations and on the features by which users can save the high-quality equations in a variety of formats. Since the main focus of the software is to bring the equations to other layout or publishing software, word processors, and other document editing software, presentation software, and web documents, MathMagic does not additionally provide pagination features such as margin and paragraph settings or document sizes, or independent printing features such as printing adjustment for large equations that span multiple pages.

As such, MathMagic only supports the basic printing features that come with the OS. If more printing options are required, you are recommended to export the equation to a word processor or a layout application and edit it there to fit the layout.

The current version of MathMagic does not support pagination for multiple page contents.

10. Using MathMagic Pro with Adobe® InDesign™

MathMagic Pro Edition for InDesign is best suitable for desktop publishers who work with high-resolution mathematical equations and scientific symbols in Adobe InDesign, although it can be widely used with other applications and documents.

MathMagic Pro Edition for InDesign is composed of the following:

- **MathMagic Pro InD application**
- **MathMagic plug-ins for Adobe InDesign**
- **MathMagic fonts**

The MathMagic plug-in provides a user interface to create, edit and manage the equation in InDesign. This plug-in also works together with MathMagic Pro application, bringing the equations created in MathMagic Pro to the InDesign document where it is saved. With the MathMagic plug-in, you can create or edit equations within the InDesign document, without having to manually import or export to and from InDesign.

When you enter an equation in MathMagic Pro and send it to InDesign, the MathMagic plug-in in InDesign receives it. MathMagic plug-in then inserts it as an in-line graphic in a text box or as a floating picture image in a graphic box depending on the cursor location. Equations inserted in the document in this manner can be double-clicked to be edited at any time.

Because the MathMagic plug-in automatically recognizes the baseline of the equation when inserted in a text box, the inline equation automatically lines up with the baseline of the normal text. However, this feature is not available for some 2-byte versions of InDesign, such as Korean or Japanese versions of InDesign. If you frequently use in-line equations and require automatic baseline alignment, the English version of InDesign is recommended.

10.1 Installation & Settings

Please refer to the Installation Guide provided on the MathMagic Pro disc(or disk image) and install the necessary components, including the correct version of MathMagic Plug-in under /InDesign/Plug-ins/ folder. Although it may vary depending on the product type and version, the following components must be installed in the following locations generally:

- **MathMagic Pro Edition** folder -> /Applications/ folder
- **MathMagic Plug-in** files -> /InDesign CS~/Plug-ins/ folder
- **MathMagic Fonts** folder -> /Library/Fonts/ folder

Once these basic files are installed, it is recommended to restart your computer so that all the new fonts are available to other applications and printer drivers.

Then, run InDesign application. If MathMagic Plug-in is installed and loaded correctly, 'Plug-ins' menu will be inserted in the InDesign menubar. Then, select **Plug-ins -> MathMagic -> Preferences** to display the Preferences dialog. Specify the path for MathMagic Pro application and other settings from the following dialog.

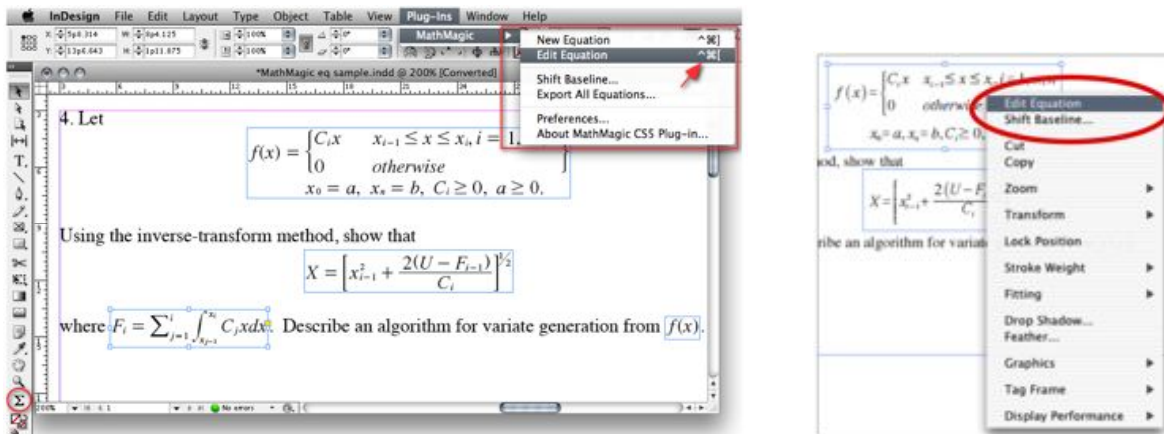


10.2 Creating Equations

There are four ways to insert an equation in your Adobe InDesign document.

- Select "Plug-Ins -> MathMagic -> New Equation" menu command
- Click and select the summation button (Σ) at the bottom of InDesign's Main Toolbar, and create an equation box in the InDesign document by dragging a rectangle where you'd like to insert an equation.
- Bring up the contextual pop-up menu with Control+click or right-button click on your mouse, and select the "New Equation" command.
- Save the equation as EPS format from MathMagic Pro application, 'File -> Export' menu. Go to 'File -> Place'

menu command in InDesign to import it into a graphic box in your InDesign document.



For example, to create an equation in a text box in your InDesign document, follow the following steps:

- Launch Adobe InDesign application.
- Create a new InDesign document or open an existing document.
- Go to 'Plug-ins -> MathMagic' submenu and select "New Equation".

This opens an equation editor window in MathMagic Pro application.

Enter the equation in the MathMagic editor window. Once entered, either **Save** (Cmd-S) the equation or **Close** (Cmd-W) the window. The equation will be automatically saved and displayed in the InDesign document.

If the cursor is inside a text box, the equation appears as in-line graphic (ILG) at the current cursor location. Otherwise, the equation is inserted as EPS graphic in a picture box near the current cursor location or where you click.

NOTE: The Display Quality of inserted equation images in InDesign document will be controlled by InDesign's preference. Higher resolution can be selected from View -> Display Performance submenu (for the current document), right-button click on an equation -> Display Performance (for the selected equation), or from InDesign application menu -> Preferences dialog (globally). For more details, please refer to the InDesign User Guide.

10.3 Editing Equations

Once an equation has been created, you can edit it in the following manner:

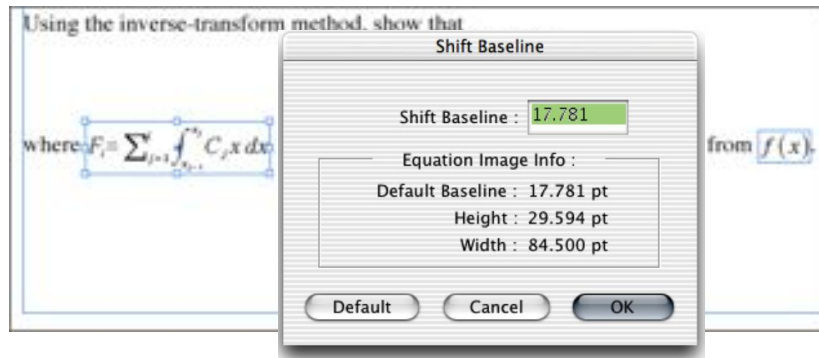
- To edit a selected equation, run the 'Edit Equation' command or double-click the equation box. This launches MathMagic Pro and opens the equation in the equation editor window. If the cursor has not changed to an arrow, press *Command* and *Option* together while double-clicking. If the cursor has been

changed into an arrow, you can right-click the equation to bring up the related contextual menu.

- The baseline in all equations are aligned automatically (2-byte versions of InDesign do not support this).

You can raise or lower the baseline in the following manner:

- Select the arrow cursor and move the equation box to the desired position.
- Bring up the contextual menu with Control-click or by right-clicking and select 'Shift Baseline'.
- Select the equation box and select '**Shift Baseline**' under the MathMagic plug-in menu.



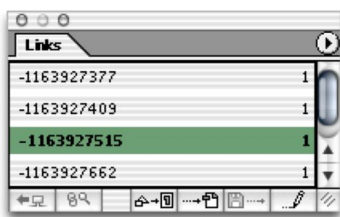
10.4 Managing Equations

If set to default in Plug-in -> MathMagic -> Preferences, an equation object created with the MathMagic plug-in is saved in the EPS format in the '**(document name).eqdb**' folder, which is located in the same folder as the InDesign document in which the equation is inserted. If you specify a different location in the Preferences dialog box, the EPS file is saved in the specified location.

If you have specified in the **Preferences** dialog box for the equation to be **Embedded** in the InDesign document, the working equation is temporarily saved in the '**(document name).eqdb**' in EPS. When the InDesign document is saved or closed, all equations are embedded in the InDesign document. If "**Delete external equation EPS files from ...**" checkbox is checked, all EPS files temporarily saved in the said folder are deleted.

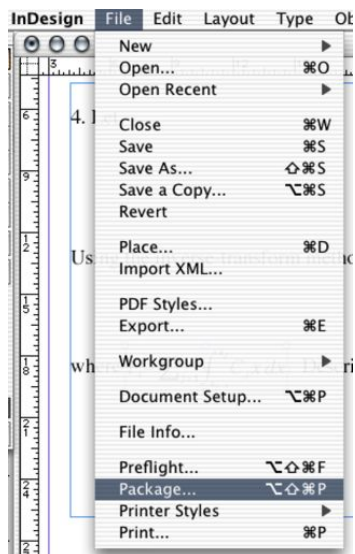
Thereafter, all equations are automatically managed by Adobe InDesign whether embedded or linked. However, if the equations are set to be saved in, and linked from, another location instead of being embedded, the **(document name).eqdb** folder must be copied along with the InDesign document when copying an InDesign document that contains the equations.

If the link to the EPS equation inserted in the InDesign document is broken, go to InDesign menubar -> Windows -> Link, launch the 'Link' floating window, and **Update the link**.



If you wish to extract all equations from an InDesign document, you can go to "**Plug-in -> MathMagic -> Export All Equations**". This saves all equations with an external link, as well as embedded equations, in the specified folder. This is useful when the equations need to be managed separately, or a new StyleSet needs to be applied across the equations to modify the fonts and sizes all at once. MathMagic Pro -> File -> **Convert** dialog can be used to batch convert or **batch apply a new StyleSet to all the equations**.

If the InDesign document is to be printed at a printing house, applicable files are sometimes bundled into a single package file by going to 'File -> **Package**'. In this case, the EPS equation files are also included in the package file. Depending on the circumstances (such as when the name of the InDesign document or the path to the EPS files contain special characters), the path to the EPS files need to be modified. Also, the fonts used in the EPS files may need to be installed separately on the system in which the package file is decompressed.



It is possible to share InDesign documents containing MathMagic equations with other Windows users. However, when sending the InDesign document to Windows, the **.eqdb** folder must be sent also, if any. If the links are broken when sending the files, go to 'Windows -> Link' from InDesign menubar and update the broken links. When a Windows file is accessed in Mac OS X, the EPS files are sometimes not recognized properly. When this happens, make sure the files are not too large in size and try changing the file type to 'EPSF' manually.

11. Using MathMagic Pro with QuarkXPress™

MathMagic Pro Edition for QuarkXPress is best suitable for desktop publishers who work with high-resolution mathematical equations and scientific symbols in QuarkXPress, although it can be widely used with other applications and documents.

MathMagic Pro Edition for QuarkXPress is composed of the following:

- **MathMagic Pro QXP application**
- **MathMagic XTensions for QuarkXPress**
- **MathMagic fonts**

The MathMagic XTensions provides a user interface to create, edit and manage the equation in QuarkXPress. This XTensions also works together with MathMagic Pro application, bringing the equations created in MathMagic Pro to the QuarkXPress document to save it. With the MathMagic XTensions, you can create or edit equations within the QuarkXPress document, without having to manually import or export to and from QuarkXPress.

When you enter an equation in MathMagic Pro and send it to QuarkXPress, the MathMagic XTensions in QuarkXPress receives it. MathMagic XTensions then inserts it as an in-line graphic in a text box or as a floating picture image in a graphic box depending on the cursor location. Because the MathMagic XTensions automatically recognizes the baseline of the equation when inserted in a text box, the inline equation automatically lines up with the baseline of the normal text.

11.1 Installation & Settings

Please refer to the Installation Guide provided on the MathMagic Pro disc(or disk image) and install the necessary components, including the correct version of MathMagic XTensions under QuarkXPress folder. Although it may vary depending on the product type and version, the following components must be installed in the following locations generally:

- **MathMagic Pro Edition** folder -> /Applications/ folder
- **MathMagic XTension** files -> /QuarkXPress/XTensions/ folder
- **MathMagic Fonts** folder -> /Library/Fonts/ folder

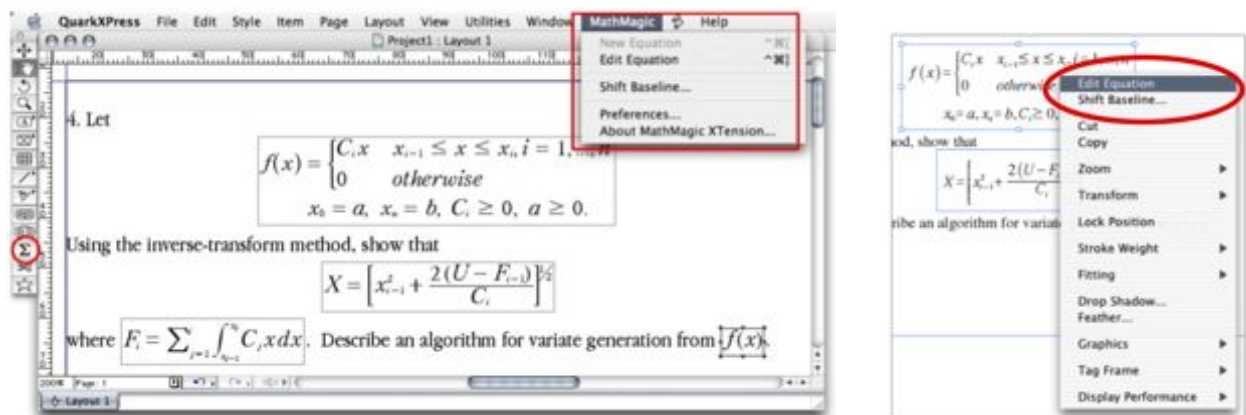
Once these basic files are installed, it is recommended to restart your computer so that all the new fonts are available to other applications and printer drivers.

Then, run QuarkXPress application. If a MathMagic XTension is installed and loaded correctly, 'MathMagic' menu will be added to the right-end of the QuarkXPress menubar. Then, select **MathMagic** -> **Preferences** to display the Preferences dialog. Specify the path for MathMagic Pro application and other settings from the dialog.

11.2 Creating Equations

There are a few ways to insert an equation in your QuarkXPress document, such as,

- Select "MathMagic -> New Equation" menu command from QuarkXPress menubar.
- Click and select the summation button (Σ) at the bottom of the QuarkXPress Main Toolbar, and create an equation box in the QuarkXPress document by dragging a rectangle where you'd like to insert an equation.
- Bring up the contextual pop-up menu with Control+click or right-button click on your mouse, and select the "New Equation" command.
- Save the equation as EPS format from MathMagic Pro application, 'File -> Export' menu. Then, import it into a picture box in your QuarkXPress document.



To create an equation in a text box in your QuarkXPress document, follow the following steps:

- Launch QuarkXPress application.
- Create a new QuarkXPress document or open an existing document.
- Create or select a Text box, and locate the cursor inside the text box.
- Click 'MathMagic' menu from the menubar and select "New Equation", or its shortcut key(cmd-]).

This opens an equation editor window in MathMagic Pro application.

Enter the equation in the MathMagic editor window. Once done, either **Save** (Cmd-S) the equation or **Close** (Cmd-W) the window. The equation will be automatically saved and displayed in the QuarkXPress

document.

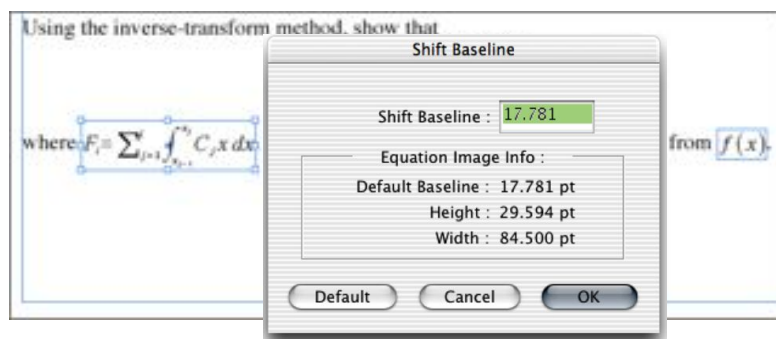
If the cursor is blinking inside the text box, the completed equation is inserted in the text box as in-line graphic. If the cursor is not in the text box, the equation is inserted in a Picture box where you click the mouse. You can also specify the options in **Preferences** under the MathMagic menu so that the equation is automatically inserted in the middle of the window, instead of waiting for your mouse click.

NOTE: The Display Quality of inserted EPS equation images in QuarkXPress document will be controlled by QuarkXPress preference. Higher resolution can be selected from Item -> **Preview Resolution** -> Full Resolution. For more details, please refer to the QuarkXPress User Guide.

11.3 Editing Equations

Once an equation has been created, you can edit it in the following way:

- Select the equation to be edited and select 'Edit Equation' under the MathMagic menu to the right of the menu bar. You can also right-click the selected EPS equation to access the '**Edit Equation**' command at the bottom of the contextual pop-up menu. (Unlike InDesign, *Quark documents do not support double-clicking equations.*)
- When MathMagic opens, edit the equation as needed. Save (Cmd-S) the equation to insert it back into its original location.
- If you do not need to edit the equation, simply close (Cmd-W) the MathMagic window.
- The baseline in all equations are aligned automatically. You can raise or lower the baseline in the following manner:
 - Select the arrow cursor and move the equation box to the desired position.
 - Bring up the contextual menu with Control-click or by right-clicking and select 'Shift Baseline'.
 - Select the equation box and select '**Shift Baseline**' under the MathMagic menu.



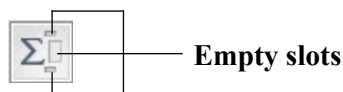
IV. Template palettes and Symbol palettes

1. Template palettes

As shown in the figure below, a template is a pre-defined arrangement of symbols and input slots for equation elements.

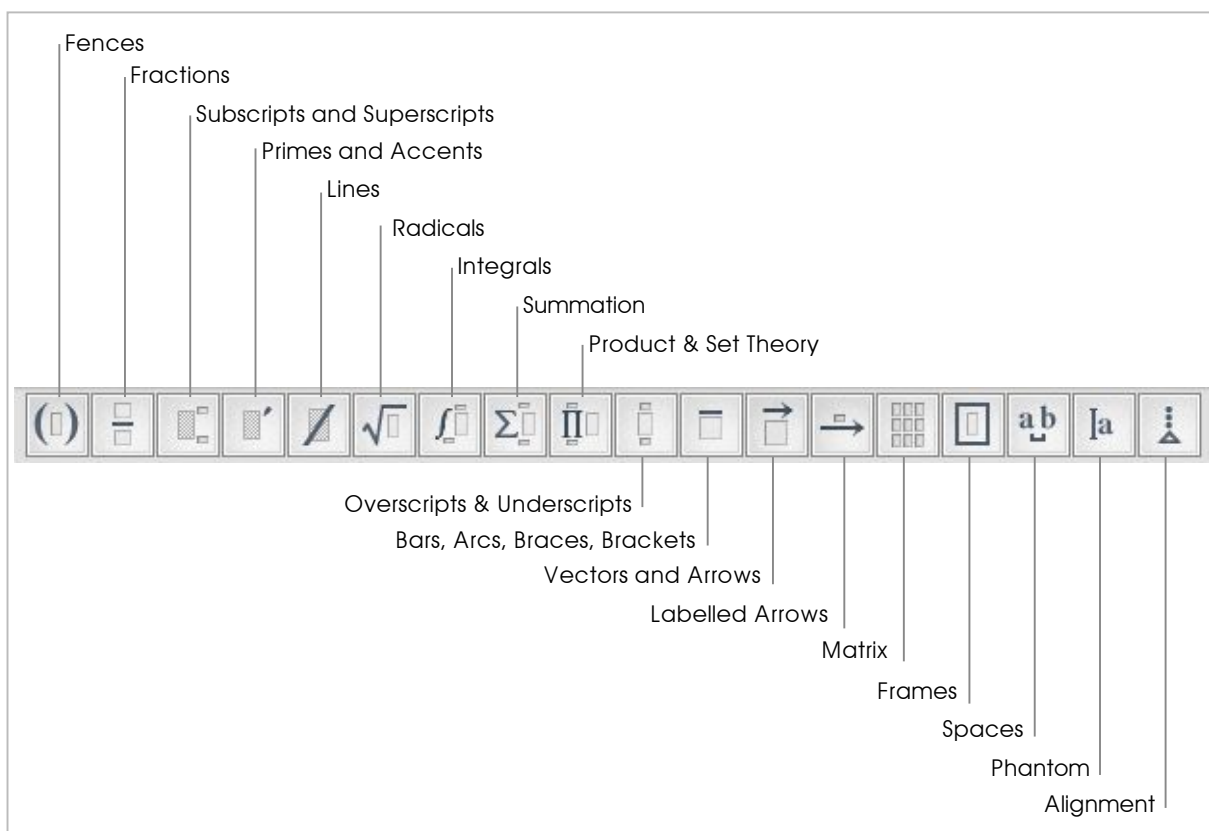


To create a mathematical expression, select the desired template from the palette and enter the appropriate numbers or characters. The following is an example of the summation template.



Templates generally come with one or more empty input slots. To enter information, you can click the applicable slot, or move the cursor by pressing Tab.

The items on the Template palette toolbar are as follows:



The following is a detailed description of each template category.

1.1 Fences



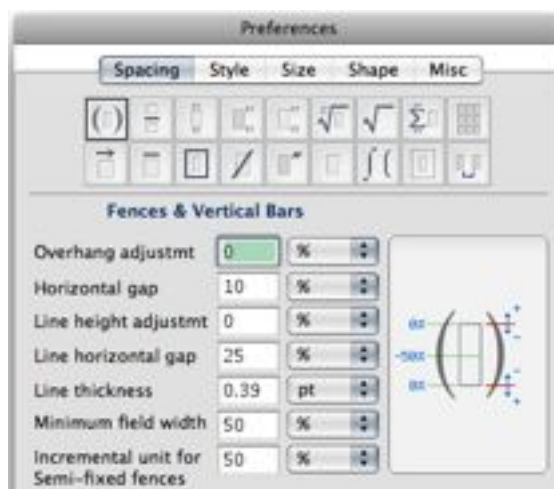
This template set provides pairs of symbols called 'Fences' which surround certain mathematical expressions or signs.

Although you can type in $()$, $\{ \}$ or $[]$ from the keyboard, this way inserts fences as regular characters rather than as templates. In this case, the automatic resizing feature of the fence is unavailable. The difference between the fences template and fences as regular characters entered with the keyboard is this:

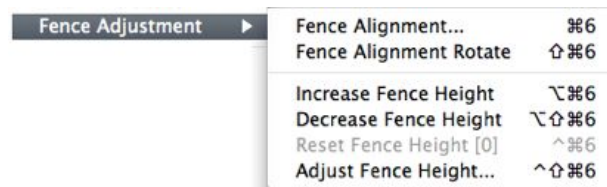
$\left[\frac{3}{x^2-1} \right]$	The bracket are characters typed in by keyboard.
$\left[\frac{3}{x^2-1} \right]$	The bracket is a Fence template.

Although symmetrical fences templates are mainly used, MathMagic also provides fences templates with a single fence, combinations, or templates with vertical lines only.

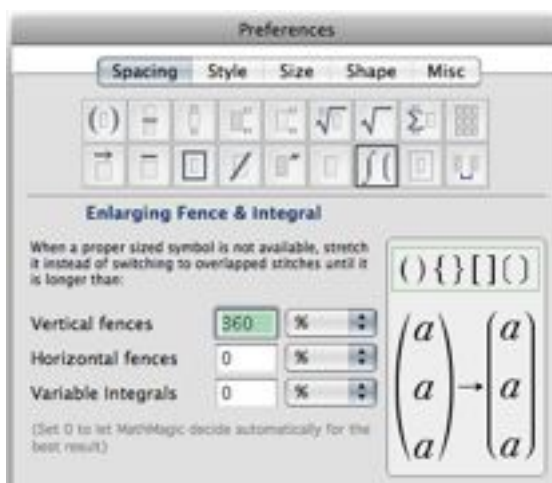
The height and spacing of fences can be specified in Preferences -> Spacing -> Fences & Vertical Bars.



If you wish to adjust the height of the fences manually, go to Format -> Fence Adjustment.





If the height of the equation within the fences exceeds a certain point, the fences are extended with vertical lines. You can go to Preferences -> Spacing to specify the point at which the vertical lines are inserted.



1.2 Fractions



This palette provides templates for creating fractions, including diagonal, horizontal and vertical fractions.

 and  are used to create full-size and reduced-size fractions respectively. The numerator and the denominator of reduced-size fractions are close to the fraction line, displayed in the subscript size. You can specify the fraction spacing, the width and the thickness of the line in Preferences.

Although they are not fractions, vertical and angle division templates are also available on the same palette.

$$\frac{y}{x} \frac{y}{x} \text{ week} / \text{day}$$

$$\begin{array}{r} x^2 - 2 \\ x \overline{) x^3 - 2x + 7} \\ \underline{x^3 - 2x} \\ 7 \end{array}$$

1.3 Superscripts and Subscripts



This palette creates templates for superscripts and subscripts. Since superscripts and subscripts typically come after a character or a symbol, this template does not provide the main slot. Rather, the superscript or the subscript is attached behind the current cursor location, that is, the character or template directly before the placement of the superscript or the subscript.


If you wish to add a superscript or a subscript to multiple character strings or large symbols, use the "1.7 Underscript & Overscript" template.

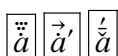
1.4 Accents, Primes, Hats, Bars



Primes, hats, bars, and dots are sometimes used to emphasize a certain mathematical variable and distinguish it from others. These accents can also be used in combinations of special European characters.

This template inserts these elements above, or to the left or to the right of, the character before the cursor. These can be inserted multiple times as needed. However, their locations change slightly depending on the order in which they are inserted.

Click the first  icon to remove all applied accents from the character where the cursor is located behind. You can also use the delete key to remove it one by one.



You can specify the height of the prime symbols and the minimum space between the base character and the accents in Preferences -> Spacing tab.

1.5 Lines



These templates are used to insert horizontal lines, X-shaped lines, slashes and backslashes through a character or a character string/slot.

The top row is used for inserting a line on a single character, and the bottom row is used for inserting a line through an entire slot.

The thickness of the lines and the overhang gap can be specified in Preferences -> Spacing.

1.6 Radicals



This palette provides templates for radicals. The gap between the radical and the contents inside and outside the symbol can be specified in Preferences -> Spacing.

You can also select '**Template Alignment**' under the 'Format' menu to align multiple radical symbols. However, this menu item is only available when the cursor is inside the radical or right after a radical template.

1.7 Integrals

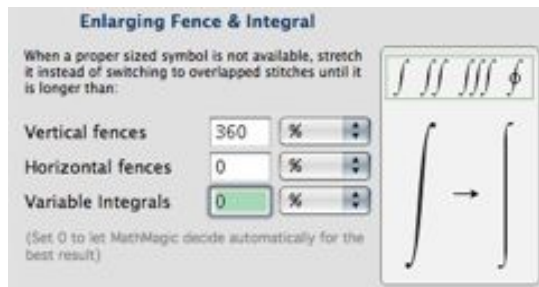
This palette contains forty different types of integral templates including single, double and triple integrals. To create **Variable height integrals**, click an integral template **while holding down Shift**. This will automatically adjust the



height of the integral symbol depending on the content inside it. (See figures below)

$$\int_0^{\infty} \Delta x \int_0^n \Delta x \quad \int_{cz}^{ax} by \quad \int_{dx}^{ax} bx \quad \int_{dx}^{cx}$$

If the height of a variable integral symbol exceeds a certain point, the symbol is extended with a straight, vertical line in the middle. You can specify the point at which the vertical line is inserted in Preference-> Spacing.



1.8 Summations



These templates allow you to create various sum symbols. You can use single summation templates repeatedly to enter multi-level summation symbols like the following:

$$\sum_i \sum_j \sum_k a_{ij} b_{jk} c_{ki}, \sum_{\substack{r \leq \infty \\ r \geq 1 \\ s \geq 1}} a_{rs}$$

The last item is not a template but a sum **symbol**. Because this symbol is used rather frequently, it is provided on this palette for the purpose of convenience.

1.9 Products and Set-Theory





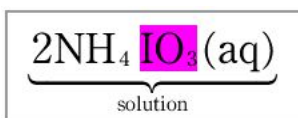
These templates are used to create products, coproducts, and set-theoretic intersections and unions.

1.10 Underscripts and Overscripts



This palette provides templates for underscripts and overscripts. Unlike '1.3 *Superscripts and Subscripts*' which are attached to an existing character before the cursor, underscripts and overscripts come with a main slot to enter a mathematical expression, or a character string, as the base. On the first row, the font size of the main slot is the full size. On the second

and the third row, the font size of the main slot is set up for large symbols. The right-most templates on the first and the second rows that contain only empty input slots ( ) are useful when creating a separate section in the current row of the equation. The first icon is for full-sized characters, and the second for large symbols. For example, if you wish to assign a background color to a certain section in an equation, you can insert an empty slot and assign a **background color** at the bottom of the Color window, as shown in the following:



If you wish to attach a superscript or a subscript to a single character or symbol, use the '1.3 Superscript and Subscript' templates. These templates do not include base slots.

1.11 Bars, Arcs, Braces and Brackets



These templates are used to insert bars, arcs, braces and brackets above or below a certain mathematical expression. They can also be inserted repeatedly to apply multiple brackets.



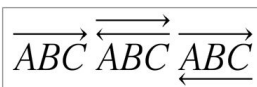
The two angle bracket templates to the right of the bottom row do not stretch out even when the length of the input slots are increased.

1.12 Vectors and Arrows



These templates are used to insert vectors, or to insert arrows above or below a mathematical expression.

The length of the arrow is automatically adjusted as the input slot becomes longer. Also, you can select the arrow template twice to insert arrows above and below the input slot simultaneously.



The shape of the arrowhead can be changed in Preferences -> **Shape**.

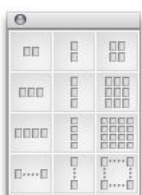
1.13 Labeled Arrows



These templates are used to express the convergence of number sequences or the property of functions. See the following for an example:

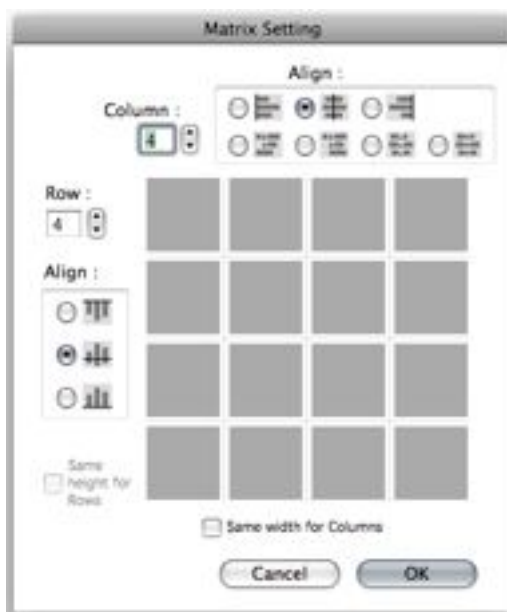
$$f_n(x) \xrightarrow{\text{uniformly}} f(x), f: X \xrightarrow{\text{onto}} Y$$

1.14 Matrix



You can use the Matrix templates to create matrix equations, period tables, vector arithmetic operations and tables.

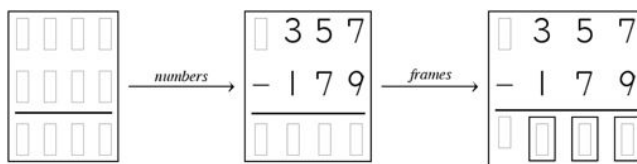
The templates on the bottom row are used to create variable matrices, or tables. Selecting these templates bring up the following Matrix Setting window. Here, you can specify the number of rows and columns, as well as the alignment.



In the Matrix Setting window, you can also specify the lines between rows and columns. Click and drag the mouse where you wish to specify the line. To delete the line, click the line again. This feature is very useful when creating a mathematical expression like the following:

$$\begin{array}{r} 3 \ 2 \\ \times \ 1 \ 2 \\ \hline 6 \ 4 \\ 3 \ 2 \\ \hline 3 \ 8 \ 4 \end{array}$$

(This example uses the *MMTextBook* font for elementary schools.)



You can go to Preferences -> Spacing -> Matrix to specify row spacing, column spacing and line thickness.

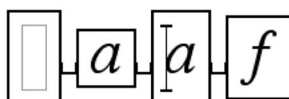
The row and column alignment can also be specified after the matrix is created. You can go to the 'Format' menu to align **left/center/right**, or go to the '**Matrix Reloaded**' sub-menu to align the **rows top/bottom/baseline**. You can also add or remove rows and columns from the sub-menu.

1.15 Frames



You can use these templates to create various kinds of frames including squares. The frame thickness, the gap between the frame and the empty slot, etc. can be specified in Preferences -> Spacing.

You can also adjust the width of the empty frame box by entering spaces. To maintain the height of each frame box regardless of the content character, you can use the Phantom templates.



1.16 Spaces



The templates on the Spaces palette have no input slots. Instead, they insert spaces of a specified width at the current cursor location. Whereas pressing the space bar inserts a space of pre-defined width, you can freely insert spaces of user-defined width. This is useful when adjusting the location of a mathematical expression or the spacing. These Spaces templates are commonly used in adjusting the spacing of characters and templates, or in supplementing the Alignment templates.

The spaces on the first row are of the **Em** variety, which use the width of the upper case 'M' of the base font of the equation. From 1/16 to full-size, a total of 7 Em based spaces are available.

The spaces on the second row are based on the **default Full width** specified in Preferences -> Size for the current equation. For example, if the specified Full-

size is 12 pt, clicking the Full-size space on the far right inserts a space of 12 pt, whereas clicking the 1/4 size inserts a space of 3 pt (12 pt /4). If the default size is changed from 12 pt to 10.5 pt, the spaces previously entered are also reduced at the same ratio. If you need spaces with **Absolute width**, you must take caution. To enter spaces with absolute width, insert spaces from the third or the fourth row. The width of these spaces are fixed regardless of the change in the size of the fonts.

The last row provides **Hyphens** and **Dashes**. The first template uses the hyphen width of the current font. **En-dash** uses a dash of the equal width as the lower case 'n', if there is no glyph for the en-dash in the current font. **Em-dash** uses a dash of the equal width as the lower case 'm', if there is no glyph for the em-dash in the current font. **M-dash** uses a dash of the equal width as the upper case 'M', and **0-dash** uses a dash of the equal width as number '0'.

You can click the question mark(?) icon at the end to go to Preferences -> Shape and specify the space width.

1.17 Phantom (Strut Bar)



The first row is used to fix the height of input slots.

You can assign fixed height regardless of the height of the content character in each slot, or only fix the height of the ascent or the descent. For example, to force-standardize the height of two fractions which uses 'a' and 'f' respectively, you can insert the strut bar to keep the height of the two slots the same.

The second row maintains the full-size width. The character that is entered above the strut bar always maintains the full-size width regardless of its unique character width. You can specify whether the character is to be aligned left, centre, or right.

Phantoms are **control characters** and are not printed. You can show or hide them by going to View -> **Show/Hide Controls (cmd-Y)**.

1.18 Alignment



These templates are used to align equation elements on multiple rows to certain locations. The following example should help you understand the role of the Alignment templates:

$$\begin{array}{l} y_1 = ax^2 + bx - 3 \\ y_2 = a_2x^2 \quad - 2 \end{array}$$

In the above figure, equation elements are aligned at alignment tabs. You can insert multiple alignment tabs on a single row, and they are aligned in the order of appearance on each row.

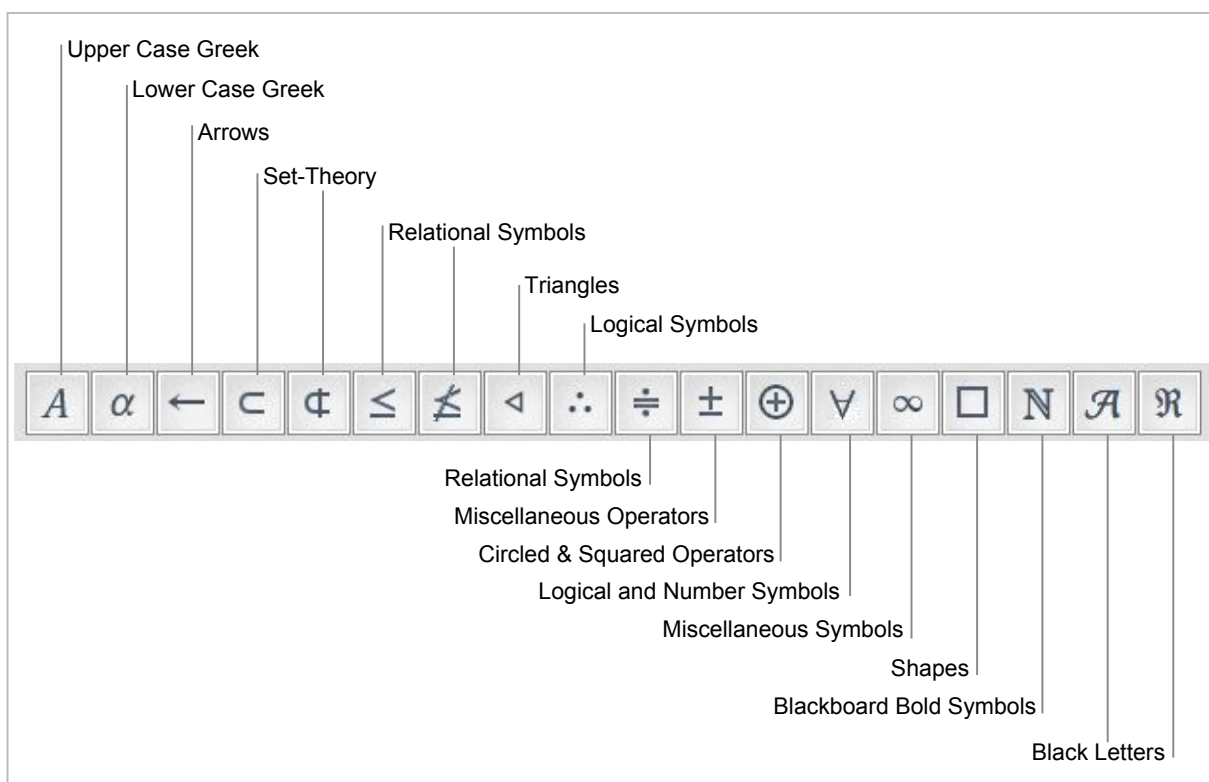
Its shortcut key is available as **command-option-Tab** key.

2. Symbol palettes

Symbols are not regular characters or numbers, but various signs of particular shapes used in mathematics and science for various purposes.

MathMagic provides more than 600 symbols with exclusive MathMagic symbol fonts. The numerous symbols are categorized on palettes according to their purposes and shapes, so that the user can quickly and easily access them.

The items on the Symbol palette toolbar are as follows:



2.1 Greek Characters



The Greek symbols are composed of two palettes: upper case and lower case Greek characters.

When MathMagic is installed, the Greek fonts MMGreek, MMCenturyOldGreek, and MMa Greek are installed. User can install some more Greek fonts from More MathMagic Fonts folder.

Once you enter a Greek symbol from a Greek palette, you can change the font only from the Style -> Define Style dialog.

Alternatively, you can enter Roman characters and then change the font to a Greek font installed in the system after selecting the characters, without having to access the Greek symbol palettes.

ABXΔΕΦΓΛΟΠΘΩΨαβχδγλπθσ MMGreek

ABXΔΕΦΓΛΟΠΘΩΨαβχδγλπθσ MMCenturyOldGreek

ABXCDEKOPQWabcdefopqrθv MMa GreekS Italic

You can also press **Command-G** and enter a Greek character from the keyboard. For more information on the shortcut keys, please refer to the 'Advanced Features' or the Appendices section of this Guide.

The default Greek font can be specified in Preferences -> Style. You can specify different fonts for the upper case letters and the lower case letters.

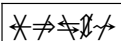
2.2 Arrows



This palette contains arrow symbols of various shapes.

For other arrow symbols not contained on this palette, you can access the code map of the MMArrow or the MMaArrow fonts.

You can combine the arrows with the "1.5 Lines" templates to create negated arrow symbols as shown below:



Some symbols can be entered with keyboard shortcuts. For more information on the shortcut keys, see the 'Advanced Features' section of this Guide.

2.3 Set Theory



This palette contains Set-Theory symbols.

Negated Set-Theory symbols are provided on a separate palette. You can also combine them with the **"1.5 Lines" Templates** to create negated symbols yourself.

$\in \notin \supsetneq \subseteq \cup$

Some symbols can be entered with keyboard shortcuts. For more information on the shortcut keys, see the 'Advanced Features' section of this Guide.

2.4 Relational Operators



This palette contains symbols that express the relationship between two terms, such as equality signs and inequality signs.

If you do not find the appropriate negated symbols in the MMNegate or MMRelation font, you can combine relational operators with the **"1.5 Lines" Templates**.

$\neq \nlessgtr \nlessgtr \nlessgtr \nlessgtr$

You can find more relational operators, binary operators, circular or box symbols on **another Symbol palettes**.

Some symbols can be entered with keyboard shortcuts. For more information on the shortcut keys, see the 'Advanced Features' section of this Guide.

2.5 Triangles and Angles



This palette contains operators and symbols of various triangular shapes, and angle symbols.

You can also combine them with the **"1.5 Lines" Templates** to create negated symbols.

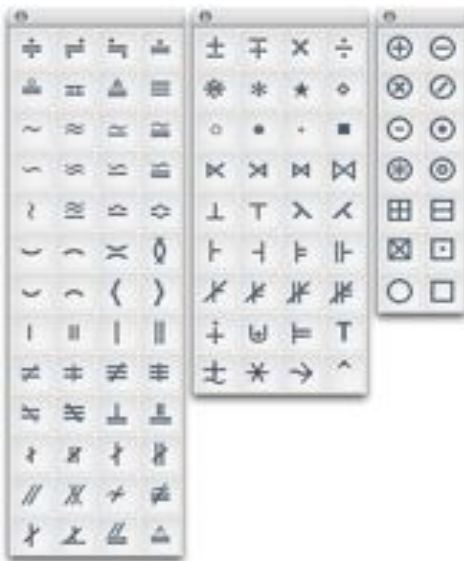
2.6 Logical Symbols and Ellipses Symbols



This palette contains logical symbols, ellipses, special quotation characters, numbers and unit symbols.

Normally, an ellipsis is a row of three dots indicating that items have been left out, usually because they are obvious from the context.

2.7 Binary Operators and Miscellaneous Operators



These palettes contain various **binary operators**, **unary operators**, operators enclosed in circles and boxes, some negated operators, and other various related symbols.

You can also combine them with the **"1.5 Lines" templates** to create negated symbols.

Some symbols can be entered with keyboard shortcuts. For more information on the shortcut keys, see the 'Advanced Features' section of this Guide.

2.8 Miscellaneous Symbols



This palette contains various symbols that are not included in the categories mentioned thus far.

Some symbols can be entered with keyboard shortcuts. For more information on the shortcut keys, see the 'Advanced Features' section of this Guide.

2.9 Shape Symbols



Various shapes that are frequently used in mathematics are provided in the symbol fonts.

There are two groups of identical shapes, categorized according to size. The shapes outlined in red are smaller than the ones at the bottom.

2.10 Blackboard Bold and Black Letters



The fonts that are frequently used in mathematical expressions are gathered together on separate palettes. These palettes provide the Blackboard Bold font, the script font, and the thick, decorative font, used in LaTeX.

2.11 Other Symbols

There are many other symbol fonts available in MathMagic symbol fonts which are not included in the Symbol palettes. You can view them with your favorite Font management utilities such as FontBook.

In addition to symbols from MathMagic fonts, you can use symbols from fonts that are installed in your system, such as **Symbol** and **Zapf Dingbats**. First, Simply enter characters in the Editor window in MathMagic, select them, and apply the applicable font from the 'Font' menu. This way, all symbol fonts installed in your system can be used.

V. Tutorials

This part contains several tutorial examples of using MathMagic. We provide step-by-step instructions for each example to make you easy to work with MathMagic.

The characters you have to type will be shown in **bold** type.

Do not worry about making mistakes. If you type something wrong, or insert some wrong symbol or template, you can correct it by **command-Z** for Undo, or by pressing the BACKSPACE key.

1. Fractions and Square Roots

In our first tutorial, we will create the equation

$$x = 2y \pm \sqrt{\frac{\sin x}{8}} + c^2$$


To create this equation, just follow below steps.


Do not forget that you have to type into the equation the **bold** characters.

Please note that the surrounding rectangle frame is just for decoration purpose only, even though it can be entered easily in MathMagic.


1. In the document window, type **x=2y** without space between characters.

You can see that only x and y has been made italic. It happens automatically because Mathematical variables are almost always printed in italics, so this is the default in MathMagic.

2. Next, to insert the \pm symbol, open the Symbol toolbar's  palette(the 2nd) and click the \pm symbol on the palette.

3. Now to insert a square root, open the Template toolbar's  palette(the 3rd) and click the 1st square root template, or **command-R** for the shortcut key. The insertion point will be located inside the root slot. Now your equation should look like this:

$$x = 2y \pm \sqrt{}$$

4. Next we need to enter a fraction template. To do this, open the Template toolbar's  palette and click the 1st fraction template, or **command-F** for the shortcut key. Now your equation should look like this:

$$x = 2y \pm \sqrt{\frac{\quad}{\quad}}$$

5. To enter the denominator of the fraction, just type **sinx**.



Please note that the current version of MathMagic has the oriental input order by default. So the cursor will position in the denominator slot first.

6. To enter the numerator of the fraction, we need to move the insertion point from denominator to numerator. To do this, you can press the TAB key or click inside the numerator slot, or press the down arrow key. Then, just type **8**.

$$x = 2y \pm \sqrt{\frac{\text{sin } x}{8}}$$

7. Next we need to insert the + symbol outside of the square root sign. To do this we have to move the insertion point to the correct position. Press TAB key repeatedly until it goes to the outside of the square root sign. By this action you can see how insertion point cycles through all the slots. If you hold down the **SHIFT** key while you do this action, the insertion point will cycle through the slots in the reverse direction.

8. Once we moved the insertion point to the outside of the square root, we just type **+c**.

9. To attach the superscript to the c, open Template toolbar's  palette and click the superscript template or simply just click Main toolbar's  superscript icon, or **command-shift-H** (cmd-H on OS 9) for its shortcut key.

10. Type **2** into the superscript slot. Finally, the equation will look like this:

$$x = 2y \pm \sqrt{\frac{\text{sin } x}{8}} + c^2$$

11. If you want to add this equation as a clip, select the equation and then execute the **Make a Clip** command under the Edit Menu. The added equation clip will be shown at Clips window with the default name of Window title, followed by a sequential number.
12. To save this document, use the Save command on the File menu or press **command-S** which is the shortcut key of this command.

2. Subscripts and Superscripts


In this tutorial we'll create an equation, which contains subscripts, superscripts, braces and summation templates.

We'll create the formula of the complex *Fourier series*, which is:

$$f(x) = \sum_{n=-\infty}^{\infty} c_n e^{inx}$$

1. In the document window, type **f**.
2. Now, you have two choices to enter the brace.



In this case, you may just want to enter **(x)** from the keyboard as characters.

If you want the brace work more specially with automatic formatting feature, you need to insert it thru the Template. To insert a pair of braces (curly brackets), open the Template toolbar's  palette and click the 1st curly bracket template. Type **x** into the braces. The insertion point will be automatically located inside the braces' empty slot when the braces are inserted.

Next, if you used braces Template, we need to type **=** outside of the braces. To do this, we have to move the insertion point to the outside by pressing TAB key or just by clicking the correct position.

3. Once we moved the insertion point, we just type **=**.


$$f(x) =$$

4. To insert the summation template, open the Template toolbar's  palette and click the  template.

Or, **command-T**, and then **S** for the 2 step shortcut. Command-T means that Template shortcut starts.

Now the equation should look like this:

$$f(x) = \sum$$

5. Type the letter **c** into the summand slot (the large slot on the right).
6. Attach a subscript to the c, using the Main toolbar's  icon, or **command-L** for its shortcut.


Fill in the subscript slot with **n**.

7. Press tab key and move the cursor to the next slot. Type the letter **e**.

8. Attach a superscript to the e, using the Main toolbar's  icon, or **command-shift-H**.

Fill in the superscript slot with **inx**. The equation should look like this:

$$f(x) = \sum c_n e^{inx}$$

9. Now, press Tab key to move to the next slot, or click inside the lower limit slot of the summation template to move the insertion point inside the slot, and type **n=-**. To insert the ∞ symbol, open the Symbol toolbar's  palette and click the infinite symbol.

12. Now, click inside the upper limit slot of the summation template, and insert the infinite symbol as we did in the previous step.



Finally, the equation should look like this:

$$f(x) = \sum_{n=-\infty}^{\infty} c_n e^{inx}$$

3. Matrix

In this tutorial we'll create the equation

$$W(y_1, y_2) = \begin{vmatrix} y_1 & y_2 \\ y'_1 & y'_2 \end{vmatrix}$$


1. First of all, type **W** in the document window.
 2. Next, to insert a pair of braces (curly brackets), just type **()** from the keyboard, or open the Template toolbar's  palette and click the curly brackets template. There is slight different behavior between these. You may choose your preferred style after trying both.
 3. Type **y** into the braces.
 4. Then attach a subscript to the y, using the Main toolbar's  icon or **command-L**. Fill in the subscript slot with **1**. Press tab key to move the cursor to the next slot.
 5. Type **, y** beside y_1 . Now we repeat the step 4 with this y. This time we fill in the subscript slot with **2**.
- Now the equation should look like this:

$$W(y_1, y_2)$$

6. Now we need to type = outside of the braces. To do this, we have to move the insertion point to the outside by pressing TAB key or just by clicking the correct position.

7. To insert the side bars, open the Template toolbar's  palette and click on  button. Now the equation will look like this:

$$W(y_1, y_2) = \left| \begin{array}{c} \\ \end{array} \right|$$

8. To insert the matrix template, open the Template toolbar's  palette and click a 2 x 2 matrix template. Now the equation will look like this:

$$W(y_1, y_2) = \left| \begin{array}{cc} & \\ & \end{array} \right|$$


9. The insertion point will be in the top left slot of the 2x2 matrix, so type **y** there, and then attach the subscript **1**. To attach a subscript, you may repeat step 4.

10. To save time, we may just create the other entries in the matrix by copying and pasting. Select the **y₁** by double-clicking on it, copy it to the Clipboard, and paste it into the other three slots in the matrix. We can use TAB key to move from a slot to the other. Now we have the equation shown below, but we've to fix it up because it's not the one we're trying to create.

$$W(y_1, y_2) = \left| \begin{array}{cc} y_1 & y_1 \\ y_1 & y_1 \end{array} \right|$$

11. Now, we need to correct the entries in our matrix. First, change the subscripts of the upper right and lower right slot to **2**. Now the equation will look like this:

$$W(y_1, y_2) = \left| \begin{array}{cc} y_1 & y_2 \\ y_1 & y_2 \end{array} \right|$$

12. The lower slots should contain the **prime** template between **y** and the subscript. To insert this, move the insertion point before the subscript, open the Template toolbar's  palette and click the prime template. Apply this step to all the lower slots. Finally, the equation will look like this:

$$W(y_1, y_2) = \left| \begin{array}{cc} y_1 & y_2 \\ y'_1 & y'_2 \end{array} \right|$$

By now, you should be able to create any imaginable equations.

4. Editing Equations

In this tutorial we'll learn some special editing techniques that are useful to modify an existing equation. These techniques will save your work time.

When you need to correct a mistake in an old equation, or make a new one that is a slight variation of the old one, it would be better to bring a copy of the old equation and then modify it as needed instead of starting from scratch.

Frequently used equations can be saved as Clips by pressing **command-M** or by using the **Make a Clip** command under the Edit menu, or by dragging & dropping the equation into the Clips window. Remember that before you save as Clip by shortcut key, the equation must be selected. All saved clips will be listed in the Clips window.

These Clips window's equation clips can be inserted back to the document by double-clicking or drag&drop to the document.

Now, let's work with the equation we made in **Tutorial 1** $x = 2y \pm \sqrt{\frac{\sin x}{8}} + c^2$.

We'll create equation shown below modifying the old one:

$$y_0 = 2y \pm \sqrt{\frac{\sin x}{8}} + c^2$$

1. First, open the document containing the equation you created in Tutorial 1 above.

If you've added the equation as a clip before, you can bring it just by double-clicking on a clip from the Clips window instead of opening the old document.

2. After we have the equation, we need to change the term on the left, x to y. To do this, select the x by double-clicking. Now the x will be highlighted, and the equation will look like this:

$$\blacksquare = 2y \pm \sqrt{\frac{\sin x}{8}} + c^2$$

3. To change x to y_0 , delete the selected item by using the Clear command on the Edit menu or by pressing the 'delete' key. Now the insertion point will be in the left of the = sign, so you can now type **y** and attach the subscript **0** to it by using **command-L** for the subscript template shortcut.

Note: You can type **y** immediately after selecting the **x**, without the deleting action. It will give you the same result.

- Now, we need to insert the fraction template. Move the insertion point to the right of the \pm symbol.


Open the Template toolbar's palette and click the fraction template. The equation should look like this:




$$y_0 = 2y \pm \frac{\sqrt{\frac{\sin x}{8}}}{} + c^2$$

- Next, we'll insert the root part inside the numerator slot of the fraction template. To do this, select all the root part of the equation and execute the **Cut** command on the Edit menu. Then, click into the numerator slot of the fraction and execute the **Paste** command on the Edit menu. The shortcut keys of these commands are **command-X** (Cut command) and **command-V** (Paste command).

Now the equation will look like this:

$$y_0 = 2y \pm \frac{\sqrt{\frac{\sin x}{8}}}{} + c^2$$

- To insert the root template into the denominator, move the insertion point inside the denominator slot of the fraction and then insert the root template by using **command-R** shortcut key, or  button in the usual way.

- Now, type **2** into the root slot. And then, to insert the  symbol, open the Symbol toolbar's  palette and click the  symbol. Finally, the equation will look like this:

$$y_0 = 2y \pm \frac{\sqrt{\frac{\sin x}{8}}}{\sqrt{2\pi}} + c^2$$

5. Fonts and Styles

In this tutorial we'll learn how to change the fonts in the equations by changing Style definitions. Using the Style feature you can achieve your specific formatting quickly and easily. In this tutorial we'll work with this equation:


$$s = \alpha(x + y) - \log 2$$

1. Create the above equation, inserting the α symbol by choosing it from the Symbol toolbar's α palette.

And the rest **s**=, **(x+y)** and **-log2** can be just typed like regular characters.

The equation will look like this:

$$s = \alpha (x + y) - \log 2$$

2. Now, to bring the Style setting pane, choose **Style** tab from the Preferences menu or simply click the Main toolbar's  icon and choose the Style tab.

The dialog shown below will be displayed.



3. The names of the styles are listed together with the font and character style (bold, italic) assigned to each. The equation we have just created uses Function, Variable, L.C. Greek, and Number styles. The Function style is automatically assigned to the letters “log”, because log is the standard abbreviation of the logarithm function. The **s**, **x** and **y** are treated as variables and assigned the Variable style. The α being lowercase Greek letter, uses the L.C. Greek style and the number uses the Number style. The brackets and =(Equal) do not use a style.
4. Now, we are going to change some of the styles so you understand how they affect an equation's appearance. Let's change the font of the Function style. To do this, press on the arrow next to the font name in the Function row and choose a different font. We'll choose the **Gadget** font, which will look noticeably different from MMTimes.
5. Click **OK** button for confirmation. The equation will be redisplayed using the new Function style. The logarithm function '**log**' will be displayed using the new font.

The equation should look like this:

$$s = \alpha (x + y) - \log 2$$

6. Next, we'll change the font of the Variable style. This style will be assigned to the s, x and y. Let's choose the same font assigned to the Function style. You may check that the italic character style is checked for Variable, but not for Function style.

7. Click the **Preview** button. The equation will be redisplayed using the new Variable style without closing the dialog box. Preview button shows you immediately the changed equation without closing the dialog and it can be ignored if you close the dialog with "Cancel" button The equation will now look like this:

$$s = \alpha (x + y) - \log 2$$

8. Now, let's also change the font of the L.C. Greek to "**Symbol**" and Number style to "**Geneva**" so that it uses the font you like. Each style will be assigned to α and to the number 2 each.

Click the Preview or the OK button. Now, the equation should look like this:

$$s = \alpha (x + y) - \log 2$$

9. To reset the style definitions changed by our testing, click the **Factory Settings** button.

10. You can now change the font and style as we did in the above steps.

Now, change them to make the equation your own.

[NOTE] You may also change the Font, Size and Style via the **Font** menu, **Size** menu and **Style** menu directly for the selection in the document, if you just want to change it once without applying the specified Font/Size/Style for the entire document.

For details on fonts, styles, sizes and spacing, refer to "*Advanced Features*" in Chapter VI.

6. Applying and Changing Colors

In this part you will learn how to apply colors to various part of templates and symbol, and how to change a color to other color after you apply.

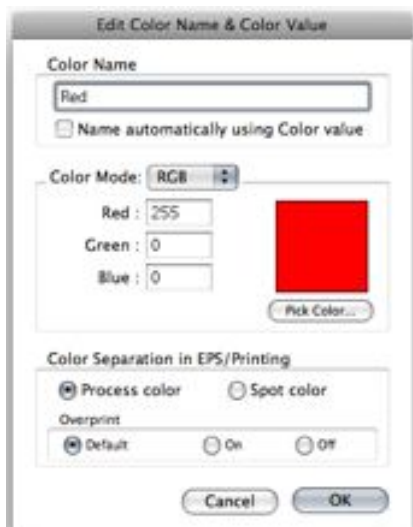
MathMagic allows you to specify colors freely just like other word processors - applying while typing-in equations, and applying colors later after you type in all equations in black.

Let's start with a simple color equation.

$$y = \frac{2}{3} x^2$$

- Contains two colors in two different blocks.

1. First enter all your equations in black.
2. Secondly, create your preferred Color styles in either Document Color list or Application Color list, by choosing "New" button from the Color window. Creating all color styles at once is fine: **Blue** and **Red**. You may enter the color value directly or select a color from the System Color Picker by clicking "Pick Color" button. Once a color is set, please "OK" button and close the dialog.



3. Select 'y', and then apply **Blue** color, by choosing from Color menu or double-clicking on the **Blue** color
4. Select 'x²', and then apply **Red** color, by choosing from Color menu or double-clicking on the **Red** color

Let's try again with a bit complex equation with templates.

$$\frac{3}{\sqrt{25}} \int_0^{\infty} x$$

- Contains a blue fraction bar, red root template, green text and black numerator text, and a blue integral.

1. First enter all your equations in black, and create your preferred Color styles: **red**, **blue**, **green**. These three basic colors are available in the Application-wide Color list on the left side of the Color window, so you can just use those colors by double-clicking on each of them, or by clicking the Right-arrow button.



2. Select all and apply **Blue** color.

$$\frac{3}{\sqrt{25}} \int_0^{\infty} x \rightarrow \frac{3}{\sqrt{25}} \int_0^{\infty} x$$

3. Select root part only and apply **Red** color.

$$\frac{3}{\sqrt{25}} \int_0^{\infty} x$$

4. Select '25', and then apply **Green** color. Select '3', and then apply **Black** which is a Normal Text.

$$\frac{3}{\sqrt{25}} \int_0^{\infty} x \rightarrow \frac{3}{\sqrt{25}} \int_0^{\infty} x$$

With this step by step applying of color to selected area, you can set a color on any particular part of equation, even on a specific portion of a template.

When selecting a specific part of a Template, **Option-clicking** will let you select a template body or symbol part of the template, which is normally not possible by keyboard or mouse dragging. Once selected, you can then apply a Color or a Nudge movement.

$$\sqrt{ax^2} \int_0^{\infty} x$$

For example, Option-click on the Root line or Integral symbol will select the specific part only.

Let's change color quick.

$$\frac{3}{\sqrt{25}} \int_0^{\infty} x \rightarrow \frac{3}{\sqrt{25}} \int_0^{\infty} x$$

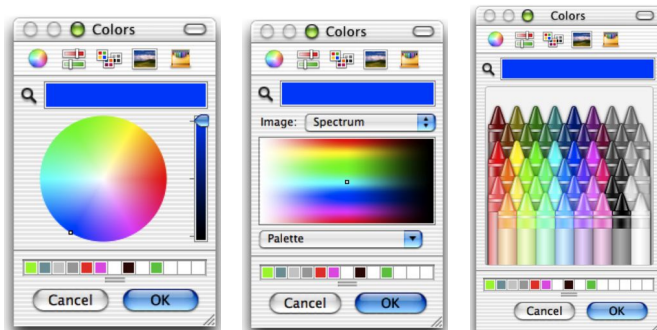
- Change all blue color components to purple color.

1. Open the document window that contains the equation front-most
2. Open Color floating window if it is not open. And click on the Document-used Color list to make the list active.
3. Select the **Blue** color from the Document color list, and press the "**ReAssign**" button.



4. Choose a new color your want from the Color Picker. Or, Purple for our testing. And the press "OK".

4. Enter a new color name if you also want to change the color style name. Otherwise, you can just leave the name untouched. Press "OK". By the way, you can use your favorite Color picker interface by switching from above list.



5. You should see the changed color in the document window.

With this approach, the more color related work you have, the more time you will save.

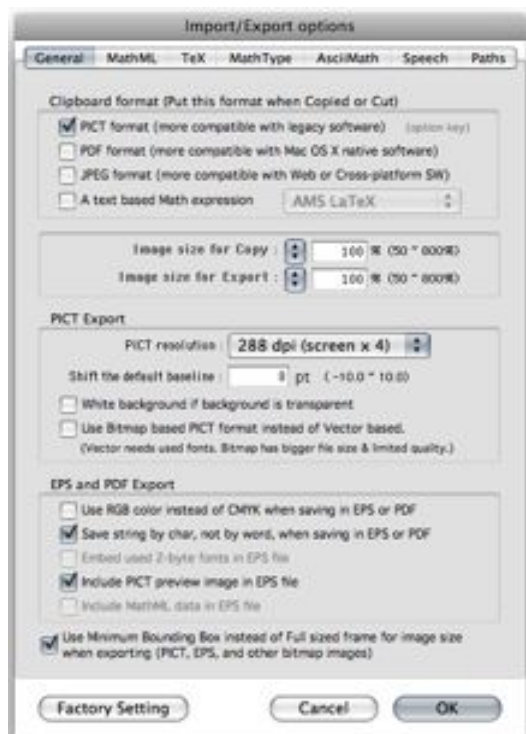
VI. Advanced Features

1. Import/Export Options

Not only can MathMagic read and write a variety of equation file formats, it also allows the user to specify, and manage, the necessary options when importing or exporting equations so as to provide greater compatibility and accommodate each user's needs and working environment, as shown in the figure below. In this window, you can take a closer look at the conversion options for the major formats provided in the **Import/Export Options** under the 'File' menu.

1.1 General

Under the 'General' tab, you can specify the clipboard format, the image size when copying and exporting/converting, options for the PICT format, and options for the EPS and the PDF format.



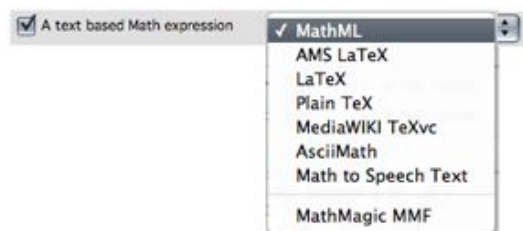
When a selection in the Editor window is copied (Cmd-C) or cut (Cmd-X), the selection is saved in the **clipboard** to be used in MathMagic or in other applications. Because some formats are better supported than others depending on the application, MathMagic allows you to select from the formats commonly

used in Mac OS X.

Most traditional Macintosh applications support the **PICT format** well. Basically a vector format, the PICT format produces high-quality images even when enlarged or shrunk. Also, the PICT format comes with the data for the **equation's baseline**. In some applications that support baseline data, the baseline of the equation is automatically aligned when the equation is pasted.

Some of the latest Mac OS X applications prefer the **PDF** for higher quality.

When you select '**A text based Math expression**', the equation is saved in the clipboard in a text-based, equation-exclusive, format such as **MathML** or **TeX**. This is useful if you wish to use the equation in MathML Editor or a LaTeX application.



NOTE: If you'd like to use MathMagic equations in the new equation editor included in **MS Word 2007** or newer, which is mainly based on MathML, you may set your Clipboard format to '**MathML**' after turning on this "A text based Math expression" check box. Then, you can copy MathMagic equation and paste it directly into MS Word's equation editor box.

"Image size for Copy" and "Image size for Export & Convert" are used when you wish to temporarily set the image size to something other than 100% upon copying the equation into the clipboard or exporting it via File -> Export or File -> Convert. The value must be between 50% and 800% by 1% increment. If the value is below 100%, the image is shrunk. When it is above 100%, the image is enlarged when copied or saved. This option does not apply to non-image formats such as MathML and TeX. It also does not apply to the EPS format because the format is independent of image resolution/ratio. The option only applies to formats such as PICT, PNG, JPEG, and GIF.

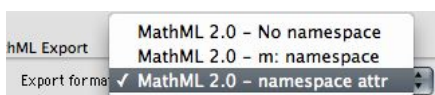
Under '**PICT Export**', you have more options for the PICT format. The specified options are applied to both the equations saved in the clipboard and the equations exported into files in the PICT format.

1.2 MathML

The options under this tab are used when the equation is exported in the **MathML format**, when a MathML file is imported, or when the MathML equation pasted from the clipboard.



Export is currently only available in MathML 2.0. For namespace, you can choose from the following three options:



When exporting in MathML, **MathMagic's .mmf data can be added as an annotation in the MathML data**. This way, when the MathML data is opened again, the original MathMagic equation data (fonts, size, colors, etc.) is also available for editing.

If "**Include HTML Header for better Browser compatibility**" is enabled, HTML header information is added to the MathML/XML data, increasing the compatibility by allowing the file to be processed in some web browsers like an HTML file.

With "**Open all <math> tags in each window if more than one**" under 'MathML Import' enabled, each equation is converted and opened if there are multiple MathML equation areas in a single MathML file (.mml, .xml, .mathml, etc.). If this option is disabled, only the first <math> tag is converted into an equation.

When converting a MathML file, if a DTD path on an internet server is specified in the MathML data, all applicable DTDs are downloaded, read, and then converted. As such, poor internet connection or large DTD files can slow down the conversion process. If "**Ignore DTD path located over the internet, for fast reading**" is enabled, instead of downloading the original DTD from the internet, MathMagic uses its built-in, standard DTD for faster processing. While there should be no problem generally, the result of the

conversion process may vary if there are symbols or contents defined only in the original DTD. User discretion is advised depending on whether the MathML file is dependent upon the DTD.

1.3 TeX

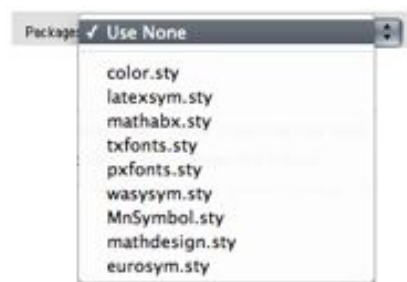
The options under this tab are used when the equation is exported in the **LaTeX format**, when a LaTeX file is imported, or when the TeX equation is pasted from the clipboard.



When exporting in LaTeX, **MathMagic's .mmf data can be added as an annotation in the LaTeX data**. This way, when the LaTeX data is opened again, the original MathMagic equation data (fonts, size, colors, etc.) is also available for editing.

Depending on the environment in which the LaTeX file is accessed, **line breaks** can be specified.

LaTeX package options are also available. Click the menu item once to enable it, and click the same item again to disable it.



With '**Use MathMagic data(.mmf) annotation first if found**' enabled, if the LaTeX file contains

MathMagic data, the equation is accessed using the MathMagic data, without converting the LaTeX data itself.

1.4 MathType

In the options window below, you can specify whether to use MathML or TeX data first upon importing a MathType equation if they are included within the MathType equation. If, on occasion, MathMagic does not recognize a part of a MathType equation, preferring LaTeX or MathML data can produce better conversion results, since these formats are generally more widely in use. However, converting directly from the MathType format typically produces better results.



MathMagic does not support exporting in the MathType format. If you need to convert an equation into MathType in MathMagic, you can export it or copy it into the clipboard in LaTeX, Plain TeX, etc. and use it in MathType, since these formats are supported by both applications.

1.5 AsciiMath

Although AsciiMath and AsciiMathML are not widely used due to their limitations in expressing complex equations and limited symbols support, there are many applications and integration attempts because of their simplicity and compatibility as text files.

You can select the AsciiMath delimiter in the following window:



When an AsciiMath equation is **pasted** directly in MathMagic from the clipboard, MathMagic automatically recognizes it for the most part. However, if the equation is similar to LaTeX or TeX and MathMagic does not recognize it automatically, you can save it as a text file and set the extension to **.txt** for better compatibility.

1.6 Speech

MathMagic supports **Text-To-Speech (TTS)** for math equations, or **Math-To-Speech**. In MathMagic, you can use the OS built-in Text-To-Speech feature or use an external, internet-based text-to-speech service.

Before the equation is synthesized for speech, you can convert the equation into an English sentence as though an English speaker is reading the equation aloud. You can do this by accessing '**Copy as Speech Text**' or '**Speak All**' under the Edit menu.

You can specify options for saving the equation as a sentence, or voice-synthesizing via a text-to-speech feature, in the following window:



1.7 Paths

In this window, you can pre-define three paths.

First, you can specify the default path for the '**Export**' dialog box when exporting an equation from MathMagic, and enable or disable it. If the specified folder does not exist, or if the path is a macro that includes variables, the folder is automatically created.

Secondly, you can specify the default path for the '**Save As**' dialog box, and enable or disable it. If the specified folder does not exist, or if the path is a macro that includes variables, the folder is automatically created. If you need to create new equations back to back and save them in a specific folder, pre-defining a path here is useful.

Thirdly, you can specify the location which will contain all the converted equations if you convert multiple equation files in File -> **Convert**.



When specifying the three paths above, you can use **Macros for each path**. When the folder is created, a real value is inserted where the macro variable is entered. This will automatically generate folders according to the date, time, and document names. There are macros that designate directories and macros for variables which replace the variables with date, time, etc. For a list of available macros, see above. For more information on macros, see '2. Using Macros' below.

2. Using Macros

In MathMagic, you can use macros where you specify the **name of the file** or **the path** (folder). **Macros** are commands by which pre-defined scripts are automatically replaced by the applicable value. Once set, macros greatly improve productivity by automatically generating folders and file names according to certain rules, thus eliminating the need to manually name each folder and file. You can also automate the process when you create or convert a large number of equations at once.

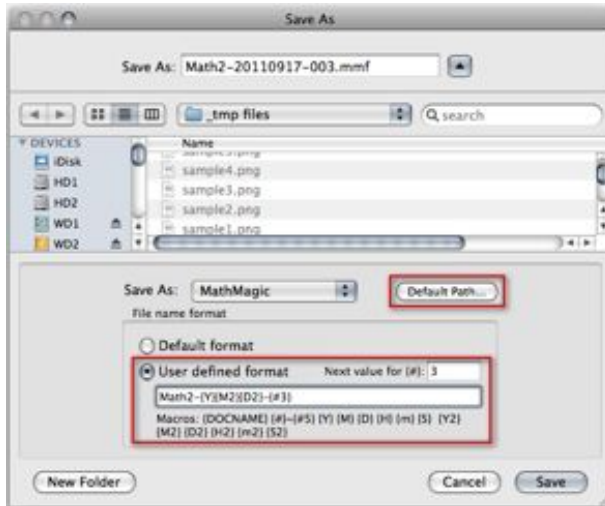
Macros can be used in the following windows related to saving files:

2.1 Save As dialog window

You can use macros when you need to specify the file name upon saving a new file, or saving an existing

file as something else.

To use macros, click the '**User defined format**' radio button **to activate the macro input field**, and select from the Macro options given at the bottom of the window. The value entered in the input field instantly updates the file name at the top of the window, and you can immediately verify the actual name of the file to be saved.



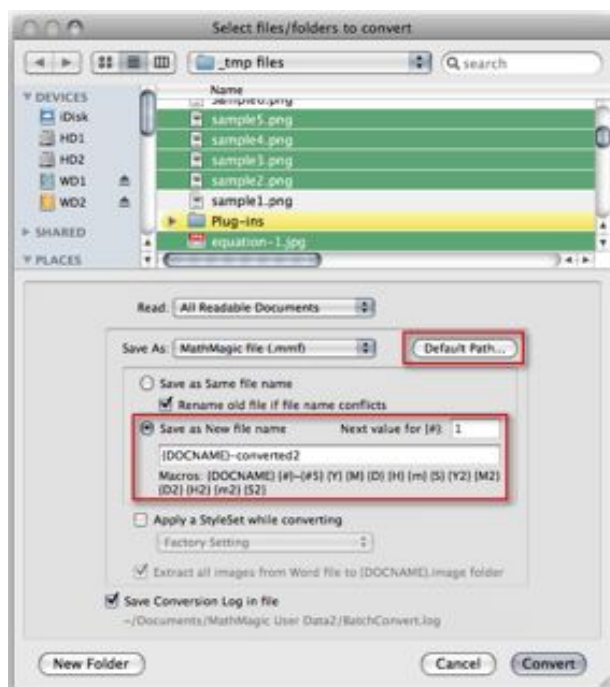
Click '**Default Path...**' to specify the default folder where the file is to be saved, and enable or disable it. Clicking this button brings up the '**Paths**' tab in the '**Import/Export Options**' window. The path entered in the 'Save As' field is used.

For more instructions on setting the Path, see 'VI. 1 Import/Export Options'.

2.2 Conversion dialog window

Selecting '**Convert**' under the 'File' menu brings up the batch conversion window as shown below. You can use macros here as well.

If you wish to specify new names for the converted files, not the originals, select '**Save as New file name**' and enter the desired file name in the file name field.



Click '**Default Path...**' to specify the default folder where the file is to be saved, and enable or disable it. Clicking this button brings up the '**Paths**' tab in the '**Import/Export Options**' window. The path entered in the 'Batch Conversion' field is used.

For more details on specifying paths, see 'VI. 1 Import/Export Options'.

2.3 Export dialog window

Selecting an item from '**Export**' submenu under the 'File' menu brings up the batch conversion window as shown below. You can use macros here as well.

If you wish to specify new names for the converted files, not the originals, select '**User defined format**' and enter the desired file name in the file name field. You may use Macros in the field, too.



Click '**Default Path...**' to specify the default folder where the file is to be saved, and enable or disable it. Clicking this button brings up the '**Paths**' tab in the '**Import/Export Options**' window. The path entered in the 'Export' field is used.

For more details on specifying paths, see 'VI. 1 Import/Export Options'.

2.4 Using Macros

All macros must be **bracketed with {}**. Macros are **case-sensitive**. The following macros are supported in MathMagic:

{DOCNAME} :	The window title (document name) of the current document is used.
{#} or {#1} - {#5} :	With each file saved, the number automatically increases by increments of 1. The number replaces {#}. If a number is included within the bracket (as in {#3}, for example), the number maintains three digits (001). You can specify the number that will replace it in 'Next value for {#}'. If the number is not specified, the real value begins from 1.
{Y} or {Y2} :	The current year. {Y} produces 4-digit years such as 2011, and {Y2} 2-digit years such as 11.
{M} or {M2} :	The current month. {M} produces 1-12. {M2} produces 2-digit months such as 01-12.
{D} or {D2} :	The current day. {D} produces 1-31. {D2} produces 2-digit days such as 01-31.
{H} or {H2} :	The current hour. {H} produces 1-12. {H2} produces 2-digit hours such as 01-12.
{m} or {m2} :	The current minute. {m} produces 0-59. {m2} produces 2-digit minutes such as 00-59.
{S} or {S2} :	The current second. {S} produces 0-59. {S2} produces 2-digit seconds such as 00-59.

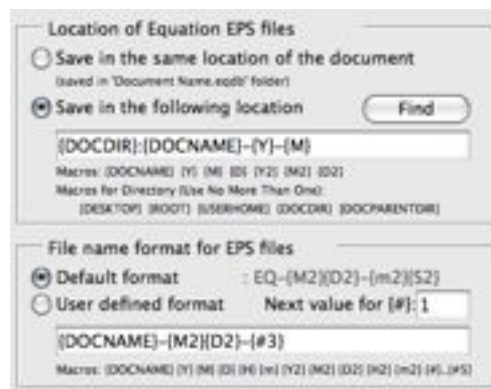
The above macros can be used for file names as well as in paths.

The macros listed below are only used for paths that specify the **folder (directory)** where the files will be saved. You can only use one at a time.

Macros used for the path to the folder in which the files are saved:

- {DESKTOP}:** Path to the 'Desktop' folder of the current user
- {USERHOME}:** Home directory of the current user
- {DOCUMENTS}:** 'Documents' directory of the current user
- {DOCDIR}:** Current directory of the document
- {DOCPARENTDIR}:** Parent directory of the current document directory

The above macros used for '**specifying paths for folders**' can only be used in Import/Export Options -> Paths shown below, or in InDesign plug-in's Options window. **They cannot be used to specify file names.**



3. Preferences and Spacing

Although the default values alone can produce high-quality equations, MathMagic allows users to specify general settings, such as the form, font and sizes of the equation, as much as possible in order to accommodate the preferences of each user, publisher, or cultural area.

MathMagic is designed in such a way that general settings, such as the form and the size of the equation, can largely be specified in the Preference window. These settings are divided into Spacing, Style, Size, Shape, and Miscellaneous settings.

You can access the Preference window through '**Preferences**' menu item under the MathMagic application menu (Cmd-;), '**Define Spacing**' under the 'Format' menu (Cmd-5), '**Define Style**' under the 'Style' menu (Cmd-Shift-5), and '**Define Size**' under the 'Size' menu (Cmd-Ctrl-5). Alternatively, you can click on the Preferences button on the Main Toolbar.



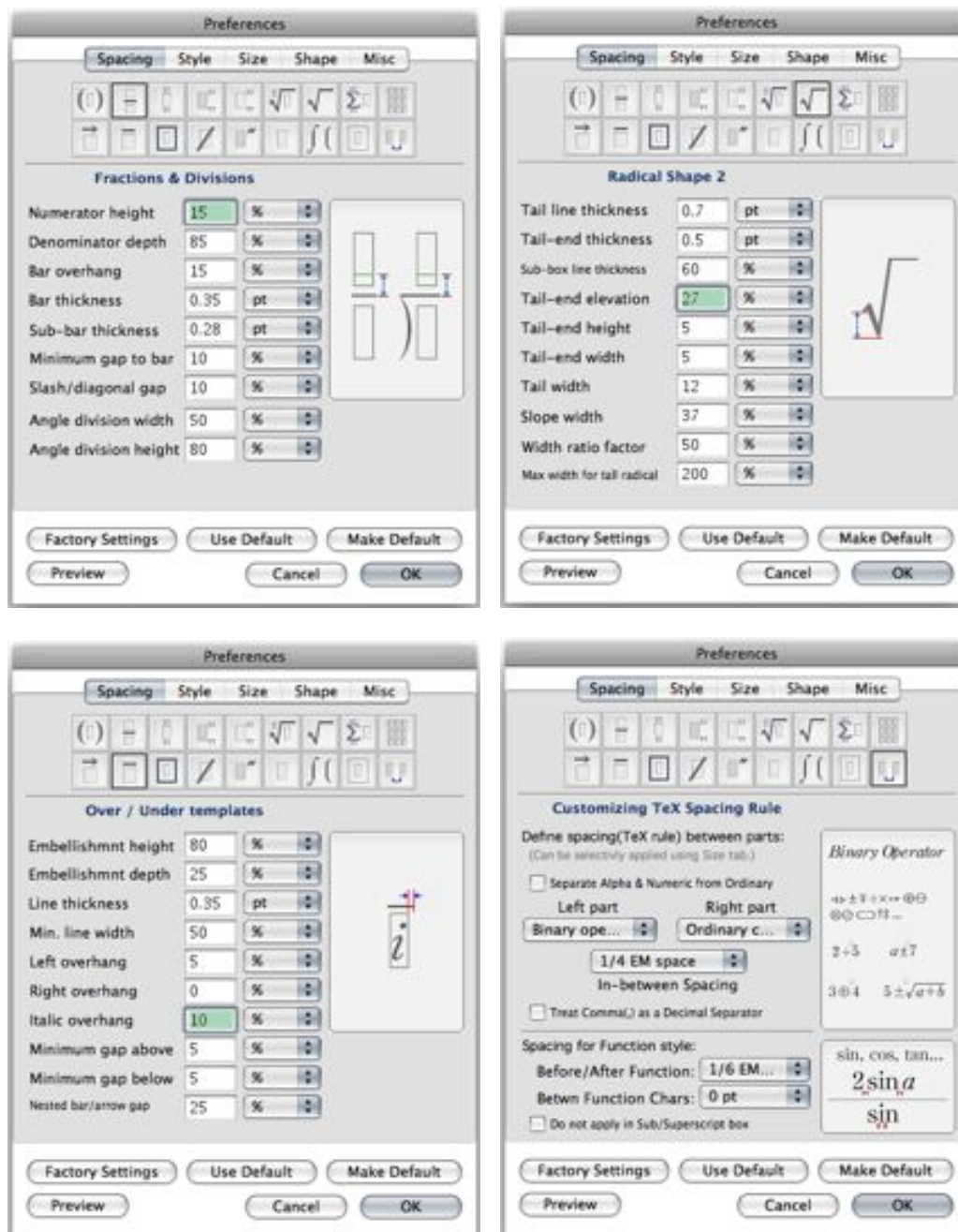
To close the window, you can press **Cmd-. (period)** or **Esc**. In effect, this is the same as clicking the '**Cancel**' button.

The Preferences window remembers the last position. Once you move it to a place that does not clutter the workspace, it will open at that location next time. This is useful when you apply changes and 'preview'.

Under the **Spacing tab**, you can **specify the gap, shape, ratio, and line thickness of main templates**. In order to help understand the role of each field and its value, the area of effect is visually represented in the figure to the right as you click on each field.

With more than **130 settings divided into 18 sections under the Spacing tab**, MathMagic supports precise specification and various customization options for each template group.

When specifying the spacing, you can select from the following measurement units for most fields: %, pt, q, mm, and inch. The percent (%) unit uses **a value relative to the 'Full' size under the 'Size' tab**.



Once the values are specified, you can click the '**Preview**' button at the bottom of the window to apply it temporarily to the current top-most Editor window. If you are not satisfied with the result, you can continue to try different values until you achieve the desired result, or click the '**Factory Settings**' button to restore the factory default values.

If you have specified the values you want and wish to apply them automatically to new documents in the future, click '**Make Default**'. If you wish to recall the values previously 'made default', click '**Use Default**'. 'Factory Settings', 'Use Default', and 'Make Default' not only affect the values specified under 'Spacing' but all values specified in the Preference window, including 'Style' and 'Size'. Caution is advised if values specified under other tabs will be affected.

4. Preferences - Style

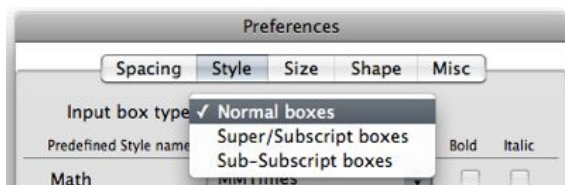
Under the 'Style' tab, you can change the 11 basic Style values. The values changed here affects all equations in the Editor window.

When an equation element is entered in the Editor window, MathMagic automatically analyzes the input, determine whether it is a number, a Greek character, a function, or a text, and then applies the style data defined in each style item shown below:



When an equation is entered, the elements to which MathMagic has automatically applied a style change as you alter the settings in the 'Style' window above. However, the style settings above **do not apply to the elements for which you have *manually changed* the font**. In this case, select the elements that were manually changed (or select the entire equation), go to **Style -> Math Default** and apply the default style to all, removing any styles that were manually applied.

In MathMagic Pro or MathMagic Prime, you can access the '**Input Box Type**' pop-up menu and specify the fonts for 'Super/Subscript' and 'Sub-Subscript / Super-Superscript' according to each style.



Professional publishers often use **thicker fonts for super/subscripts and the subscript of a subscript (sub-subscript)**. To accommodate this, MathMagic allows you to specify the font separately. Moreover,

MathMagic Pro and Prime Editions come equipped with the **-S and -SS variations for the MMa- fonts** for super/subscripts and sub-subscripts, respectively. You can find these fonts in the **'More MathMagic Fonts' folder** inside the 'MathMagic Pro/Prime Edition' folder. Each style has a checkbox on the right to select the **'Bold'** and **'Italic'** options. However, if the specified font is an OpenType font, 'Bold' and 'Italic' options cannot be specified. Instead, you must select the bold or the italic variation of the fonts (separate font files) directly from the pop-up menu.

For **'Operators + - = < >'** down below, you can separately specify the font for the five commonly used operators that can be entered with the keyboard directly. This feature is implemented so that, even if you were to use the font designed for the text, the vertical alignment, the thickness of the stroke, and the width could be coordinated with other symbols and operators relatively easily.

Also, you can access the **'Operators & Symbols Font'** pop-up menu to specify the font for all other MathMagic operators and symbols. MathMagic currently provides **MM- fonts and MMa- fonts** for symbols. MMa- fonts also include **MMa- S** fonts for super/subscript slots and **MMa- SS** fonts for sub-subscript or super-superscript slots.

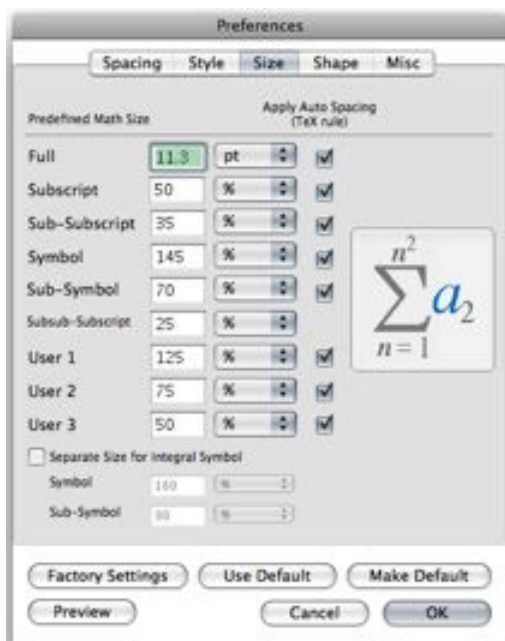
Some of these features are not available in MathMagic Personal Edition.

5. Preferences - Size

Under the **'Size' tab**, you can change the text size for each type of input slots.

Full size is the standard size of equation elements applied to general equation text boxes. **The size unit** must be an absolute unit such as pt, q, mm, and inch. The value entered here becomes the reference point for the **relative unit (%)** entered elsewhere (size, gap, etc.). Full size is usually the same size as the body text of books and other published material that include equations.

Other fields can be in the **% unit which is relative to the absolute or full size**.



The '**Subscript**' field contains the full size value of letters entered in subscript slots, and the '**Sub-Subscript**' field contains the size value of the contents in a subscript slot of a subscript slot. The '**Sub Sub-Subscript**' field contains the font size of a subscript slot of a subscript slot of a subscript slot, although 3-level-deep subscripts are not common.

The '**Symbol**' field specifies the default size of symbols that are larger than regular numbers or letters, including integrals, summation symbols, and set operators. The '**Sub-Symbol**' field specifies the size of these symbols when they are used in a subscript slot.

If you enable '**Separate Size for Integral Symbol**' below, you can specify the size of the integral symbol separately when you wish to make it larger than other symbols.

Moreover, you can assign **frequently used sizes to User 1, 2, and 3** to access them quickly from the 'Size' menu on MathMagic's menu bar.

Also, by checking the '**Apply Auto Spacing (TeX rule)**' box to the right of each field, you can specify whether MathMagic is to adjust the gap between elements automatically when an equation is entered in an input slot. You can go to **Spacing -> Customizing TeX Spacing Rule** to customize the gap adjustment. When the checkbox is left bank, the gap on either side of operator and function templates is not adjusted separately.



After you change sizes and temporarily apply the changes by clicking '**Preview**', you can click '**OK**' to finalize the changes in the current Editor window. If you click '**Cancel**', all the changes in the Preference window and in the preview are cancelled, restoring the original values in the Editor window.

Some of these features are not available in MathMagic Personal Edition.

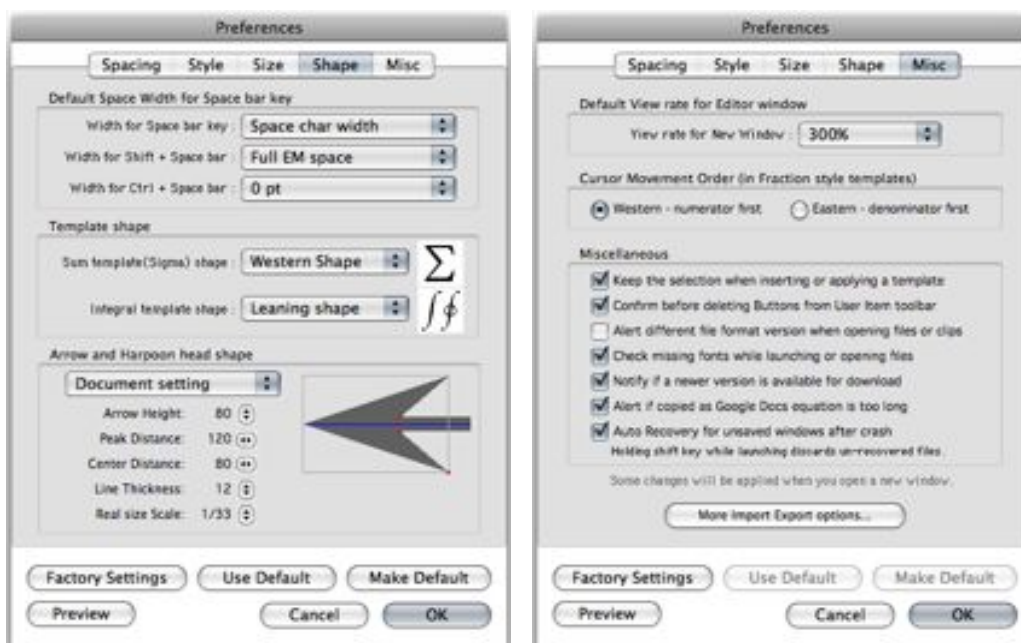
6. Preferences - Shape and Misc

Under the '**Shape**' tab, you can specify the shape of **sigma templates, integrals, and arrows**.

For arrows, you can choose from a pre-defined list, or specify the values yourself to produce desired shape and size.

You can also specify the width of the space entered when you press the space bar.

Under the '**Misc**' tab, you can mainly specify settings used across MathMagic, not just in a certain document. You can specify the default view rate of Editor windows. You can also specify whether to move the cursor to the numerator first (Western) or to the denominator first (Eastern) when you press the Tab or arrows keys within a fraction template.



7. Variable Length Integrals

MathMagic provides variable length integrals which extend vertically according to the height of the equation.

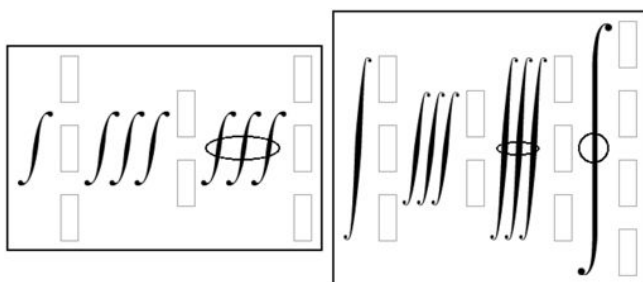
To insert a variable length integral, click any integral template while holding down the **Shift** key.



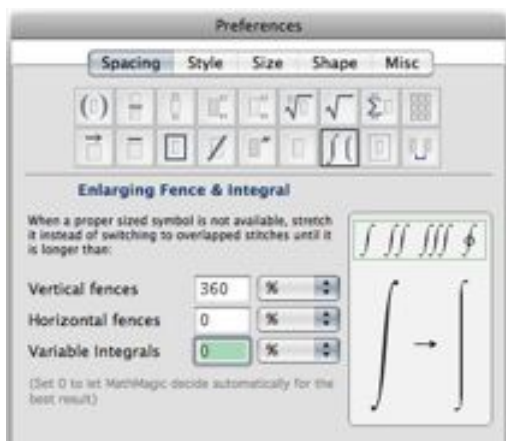
+ Click a template while holding down **Shift**

This feature is available for all templates included in the Integral palette.

The following two examples show the difference between integrals and variable length integrals. The example on the left shows regular integrals, and the example on the right variable length integrals. These examples will help you better understand the function and purpose of variable length integrals.




When the size of a variable length integral exceeds a certain point, the symbol is extended by **continually inserting vertical beams**. You can specify the threshold in Preferences -> Spacing, as shown below. If you enter 0, MathMagic automatically uses the optimal value.

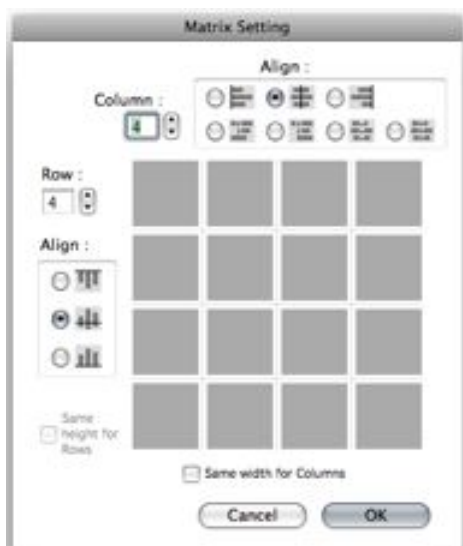


8. Custom Matrix

MathMagic gives you several options when creating a matrix.

Of the various matrix shapes, if you wish to create a matrix at $n \times n$, click any of these icons() or bring up the dialog box by pressing **Cmd-T, M**.

In this dialog box, you can specify the number of rows and columns, their alignment, and the lines between the rows and columns.



You can create up to 31 rows and columns and, consequently, you can create a matrix from **1 x 1 to 31 x 31**. You can also insert another matrix inside each input slot in a matrix.

After a matrix is created, you can add or remove rows and columns at the desired location as necessary.

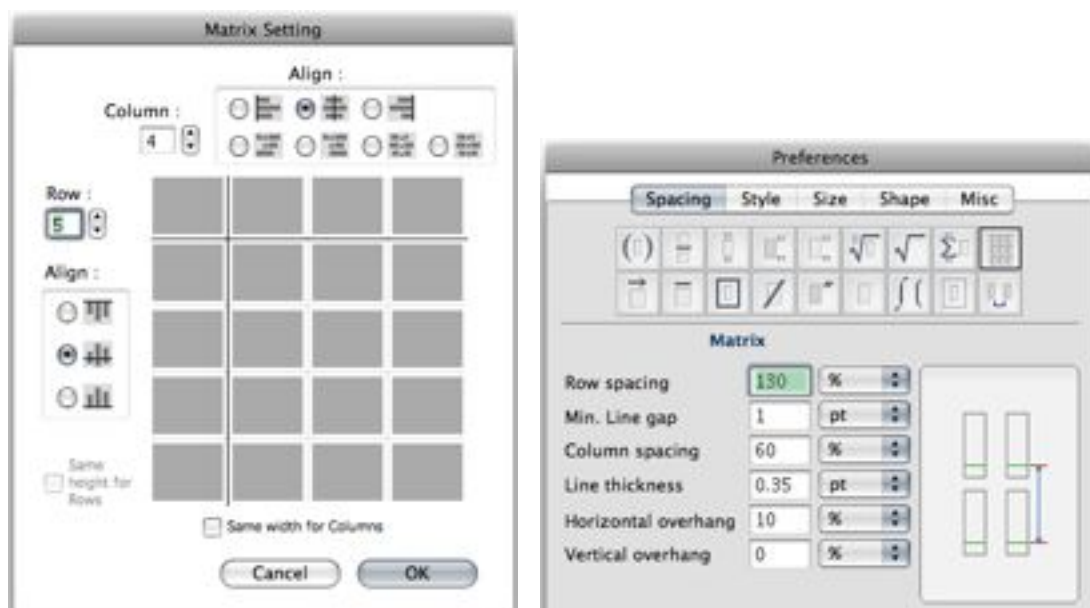
You can also access the '**Matrix Reloaded**' sub-menu under the 'Format' menu to utilize a **variety of matrix editing features**, including border definition and alignment options.

The alignment of each row and column can be changed in the 'Format' menu. You can use the **left/center/right alignment** options under the 'Format' menu, and use the **top/baseline/bottom alignment** options under the 'Matrix Reloaded' sub-menu. Alignment options are only available **when the cursor is located inside the matrix**.

Also, lines can be inserted between rows and columns. This feature is useful in creating simple charts, as shown below, or a form for multi-level calculations.

	<i>x</i>	<i>y</i>	<i>z</i>	<i>sum</i>
<i>a</i>	3	5	7	
<i>b</i>	1	6	4	
<i>c</i>	2	8	3	

To insert a line between rows or columns, click and drag until you have the desired length. To delete the line, click the line again.



You can specify the line thickness as well as the gap between the line and the matrix in the matrix section under Preferences -> Spacing.

9. Using Colors

This chapter covers, in detail, MathMagic's color concept, Color floating window, and the Color menu. For specific instructions on applying colors to templates and symbols, see the tutorial section in 'V.6 Applying and Changing Colors'.

9.1 Color Style

MathMagic gathers color data and manages them as **Color Styles**. A color style consists of the color type (**RGB, CMYK, Grayscale**), the color values, specifications for spot colors and overprinting, and the name of the color. Each color listed in the Color window composes a color style.

When working on a project with others, multiple color styles can be created and used. These color styles can be shared with other team members to keep the same color profiles for the project.

Once you apply a certain color style to a MathMagic equation, you can change the color in the color style and apply the change across the equation all at once. So, you have no need to scour the entire document to change the color of each equation element. If you need to use a variety of colors while working on a book or a major project, this feature will greatly improve your productivity.

9.2 Application Colors and Document Colors

MathMagic provides two color sets: Application Colors and Document Colors.

Application Colors comprise a color set that can be used across MathMagic documents, that is, on all Editor windows. These color styles are listed under **Application-wide Colors** on the left of the Color window. In this list are default colors that are frequently used. You can freely delete, modify, or add to these colors. Application-wide Colors are saved in the following location:

~(user home directory)/Documents/MathMagic User Data2/Color/UserDefaultColor

When working on a project, you can share the files in **UserDefaultColor** with other team members to standardize the color values. However, these may not be compatible with MathMagic for Windows.

Document Colors are a set of colors used only in a certain document. These color styles are listed on the right of the Color window. All colors used in the document is listed under **Document-used Colors**. Document color styles are saved in each MathMagic document or each equation. As such, when you send the document to someone else and the recipient opens it, the recipient will have the same color styles listed under Document-used Colors.

9.3 Using the Color Window

On the Color floating window, you can create a new color style, delete it, change its name or color, apply it, or switch colors between Application Colors and Document Colors. As such, to learn how to use colors in MathMagic, you need to understand all the features of the Color window, along with their roles.

On the Color window, the two lists are displayed, as shown below. Application Colors lists all colors used **across the application**. Document Colors displays all color styles used in **the top-most document**.



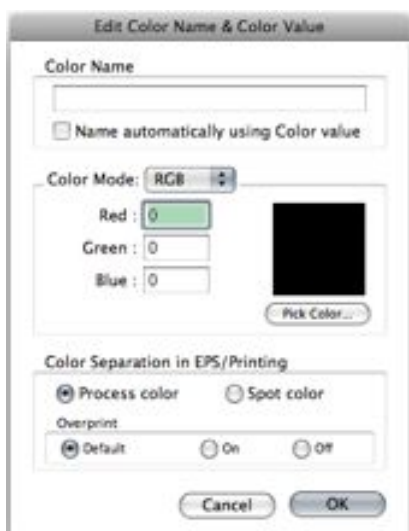
To apply a color style to the current selection, double-click it from Application-wide Color list. If this

color style has not yet been listed under Document-used Color list, it is automatically added to the listed. You can also select an application color and click the right arrow button to transfer the color style. In this case, the color style is listed under Document Colors without being applied to the current selection. If the color style is already listed under Document Colors, the same color is not listed twice. Also, you can select a document color and click the left arrow button to move it to Application Colors.

To create a new color style, click '**New**'. Be sure to select the appropriate list (Application Colors or Document Colors) before clicking 'New', as the new color style will be listed under the list that is currently selected.

Clicking the 'New' button brings up a dialog box where you can specify the color name, the color type, and color customization. You can manually enter the color value, or you can click '**Pick Color**' to select the desired color through the system-standard color picker window. Using the color picker window enters the color values automatically.

Note: Color names must not contain commas or parentheses.



When a new color is created, it is listed under one of the lists on the Color floating window, or under the 'Color' menu. You can select it from the list to apply it to the current document.

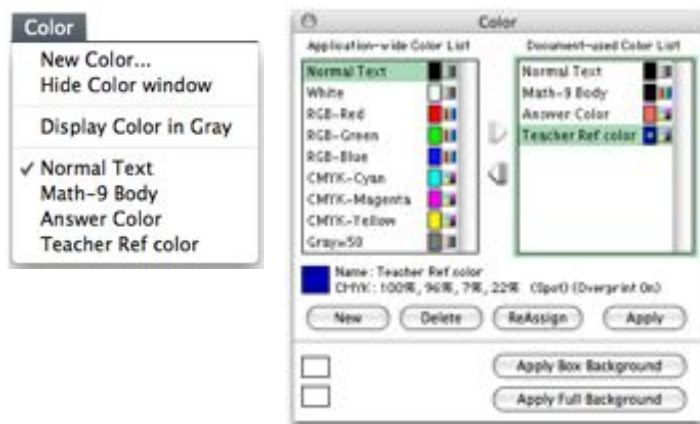
Click '**ReAssign**' to change the color or the name of the color style that is currently selected. The process is the same as creating a new color style by clicking the '**New**' button.

Click '**Apply**' to apply the currently selected color style to the current cursor location or to the selection. You can also apply a color style by **double-clicking** it.

Click '**Delete**' to remove a color style from the list. The color style that is currently in use in the equation cannot be deleted. To delete this color style, you must first remove the color from the equation.

9.4 Using the Color Menu

The 'Color' menu gives you easy access to Document Colors. Through this menu, you can create new color styles, or apply colors to the current selection in the document or to the current cursor location. The list of colors assigned to the current top-most window is listed under '**Document-used Colors**' on the right of the Color floating window. The same is displayed under the 'Color' menu.



For more information, see 'III.2.8 Color Menu'.

9.5 Sharing Color Styles with Others

When you work with a team of people to put together books or large documents, there may be a need to share the same color styles between team members.

In this case, create a list of color styles from the Color floating window according to the color planning of the project. Add any color styles that need to be shared to **Application-wide Colors** and exit MathMagic. Copy the **Default color style file** in the following location for your team members. Your team members must then save the files in the identical location and launch MathMagic.

[~\(user home directory\)/Documents/MathMagic User Data2/Color/UserDefaultColor](#)

Alternatively, you can create a document, add the necessary color styles to Document-used Colors and share the document with other team members. Your team members can open the document, select the necessary color styles from Document-used Colors, and click the left arrow button to add the color styles to Application-wide Colors.

9.6 Sharing and Saving Colored Equations

As with other equations, colored equations can be shared in the following ways:

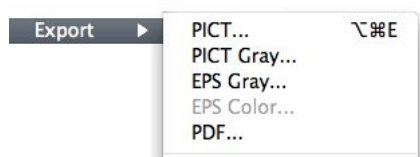
- Save in PICT, PNG, JPEG, EPS, or MathMagic format
- Paste in other applications or other MathMagic documents
- Drag & drop in other applications
- Copy into clipboard

LaTeX, Plain TeX, and Text-To-Speech, however, may not support or display the color data properly.

In MathMagic Personal Edition, you can export colored equations in the PICT, PNG, or JPEG format. However, since the Personal Edition only supports Gray EPS, the colored equation will be converted to grayscale if you choose to save it in the EPS format.

9.7 Exporting Colored Equations in Color EPS and Gray EPS

In MathMagic Personal Edition, you cannot export colored equations in Color EPS. Colored equations are converted to grayscale and saved in Gray EPS. '**EPS Color**' under the 'Export' sub-menu is only active in MathMagic Pro or Prime Edition.



When using MathMagic Pro or Prime Edition through the MathMagic plug-in in Adobe InDesign, the colored equation sometimes needs to be treated in Gray EPS as well as Color EPS depending on your work.

If the document contains colored equations, the equation is always sent to InDesign in the Color EPS format. However, if you wish to save the colored equation in **Gray EPS temporarily**, hold down the **Shift** key and select '**Save in InDesign**' under the 'File' menu, or press **Shift+Cmd+S**. Alternatively, you can enable '**Display Color in Gray**' under the 'Color' Menu before saving the document.

Even when the document is saved in Gray EPS, the original MathMagic document included in it still maintains the color data. Therefore, you can re-open the original to modify and edit the color data.

VII. Support

If you encounter problems while using MathMagic, or have any technical questions, please contact us by one of the following options.

1. Customer Support and Technical Support

Email: support@mathmagic.com
Web: <http://www.mathmagic.com/support/>

2. Purchase Order, Bundle, Distribution

Please contact our sales dept. for purchasing, bundling or distributing MathMagic.

MathMagic Sales & Marketing Div.

Email: sales@mathmagic.com
Tel: 1-778-880-0605

3. Source License, Custom Development

Contact us for our source license program or custom development service.

Email: sales@mathmagic.com
Tel: 1-778-880-0605





















































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VIII. Appendix

1. Shortcut keys

1.1 Template Shortcut Keys

All template shortcut keys begin with **command-T**. Frequently used templates have dedicated shortcut keys, for example, command-F for Fraction template.

 cmd-9 or cmd-0 cmd-T, 9 or 0	 cmd-H or cmd-shift-H (OS X) cmd-T, H	 cmd-T, capsLock-P	 cmd-capsLock- cmd-T, capsLock- -
 cmd-shift-9 or cmd-shift-0 cmd-T, shift-9 or shift-0	 cmd-L cmd-T, L	 cmd-T, N	 cmd- ` cmd-T, `
 cmd-[or cmd-] cmd-T, [or]	 cmd-J cmd-T, J	 cmd-T, shift-N	 cmd- ~ or cmd-shift- ` cmd-T, ~ or shift- `
 cmd-shift-[or cmd-shift-] cmd-T, shift-[or shift-]	 cmd-T, U	 cmd-T, capsLock-N	 cmd-capsLock- ` cmd-T, capsLock- `
 cmd-T, \	 cmd-T, shift-U	 cmd-T, M	 cmd- ' cmd-T, '
 cmd-T, shift-\	 cmd-T, S	 cmd-shift-M cmd-T, shift-M	 cmd- " or cmd-shift-' cmd-T, " or shift-'
 cmd-F cmd-T, F	 cmd-T, shift-S	 cmd-capsLock-M cmd-T, capsLock-M	 cmd-capsLock-' cmd-T, capsLock-'
 cmd-shift-F cmd-T, shift-F	 cmd-T, capsLock-S	 cmd-B cmd-T, B	 cmd-T, .
 cmd-capsLock-F cmd-T, capsLock-F	 cmd-I cmd-T, I	 cmd-/ cmd-T, /	 cmd-T, shift- .
 cmd-T, D	 cmd-T, shift-I	 cmd-shift-/ cmd-T, shift-/	 cmd-T, capsLock- .
 cmd-T, shift-D	 cmd-capsLock-I cmd-T, capsLock-I	 cmd-capsLock-/ cmd-T, capsLock-/	 cmd-T, A
 cmd-R cmd-T, R	 cmd-T, P	 cmd- - cmd-T, -	 cmd-T, shift-A
 cmd-shift-R cmd-T, shift-R	 cmd-T, shift-P	 cmd-shift- - cmd-T, shift- -	 cmd-option-Tab

1.2 Symbol Shortcut Keys

All symbol shortcut keys begin with **command-K**.

	cmd-K, C		cmd-K, <		cmd-K, -		cmd-K, A
	cmd-K, shift-C		cmd-K, >		cmd-K, shift--		cmd-K, shift-A
	cmd-K, E		cmd-K, shift-<		cmd-K, T		cmd-K, D
	cmd-K, shift-E		cmd-K, shift->		cmd-K, shift-T		cmd-K, shift-D
	cmd-K, U		cmd-K, =		cmd-K, S		cmd-K, O
	cmd-K, shift-U		cmd-K, shift-=		cmd-K, shift-S		cmd-K, shift-O
							cmd-K, I
							cmd-K, shift-I

1.3 Greek Shortcut Keys

All Greek symbols shortcut keys begin with **command-G**.

	cmd-G, shift-A		cmd-G, shift-N		cmd-G, A		cmd-G, N
	cmd-G, shift-B		cmd-G, shift-O		cmd-G, B		cmd-G, O
	cmd-G, shift-C		cmd-G, shift-P		cmd-G, C		cmd-G, P
	cmd-G, shift-D		cmd-G, shift-Q		cmd-G, D		cmd-G, Q
	cmd-G, shift-E		cmd-G, shift-R		cmd-G, E		cmd-G, R
	cmd-G, shift-F		cmd-G, shift-S		cmd-G, F		cmd-G, S
	cmd-G, shift-G		cmd-G, shift-T		cmd-G, G		cmd-G, T
	cmd-G, shift-H		cmd-G, shift-U		cmd-G, H		cmd-G, U
	cmd-G, shift-I		cmd-G, shift-W		cmd-G, I		cmd-G, W
	cmd-G, shift-K		cmd-G, shift-X		cmd-G, K		cmd-G, X
	cmd-G, shift-L		cmd-G, shift-Y		cmd-G, L		cmd-G, Y
	cmd-G, shift-M		cmd-G, shift-Z		cmd-G, M		cmd-G, Z
	cmd-G, shift-J		cmd-G, shift-V		cmd-G, J		cmd-G, V

2. Editing keys

MathMagic supports commonly used editing keys in the equation editor window. Some keys are as followings.

<u>Keyboard</u>	<u>Behavior</u>
shift-click	If you click the mouse while holding down shift key, it selects the contents between the previous cursor location and the clicked point. This works on multiple lines.
option-click	If you click the mouse while holding down option key, it selects the contents from the beginning of the box to the clicked point. If clicked on a fence, integral symbol, root template, accent, fraction line, or any large symbol or variable symbol, MathMaigc selects the component. Then, Nudge and Color can be applied to the selection.
right arrow	Move cursor to the right At the end of a template box, move to the beginning of the next box
left arrow	Move cursor to the left At the beginning of a box, move to the end of previous box
down arrow	Move to the nearest point of the next line
up arrow	Move to the nearest point of the previous line
cmd-right arrow	Move to the end of the line
cmd-left arrow	Move to the beginning of the line
cmd-down arrow	Move to the end of the document
cmd-up arrow	Move to the beginning of the document
shift-right arrow	Move cursor to the right, and select in-between contents
shift-left arrow	Move cursor to the left, and select in-between contents
shift-down arrow	Move to the same point of the next line, and select in-between contents
shift-up arrow	Move to the same point of the previous line, and select in-between contents
shift-cmd-right arrow	Move to the end of the line, and select in-between contents
shift-cmd-left arrow	Move to the beginning of the line, and select in-between contents
shift-cmd-down arrow	Move to the end of the document, and select in-between contents
shift-cmd-up arrow	Move to the beginning of the document, and select in-between contents
option-right arrow	Nudge(move) the current selection to the right 1-point of the current view
option-left arrow	Nudge(move) the current selection to the left 1-point of the current view
option-down arrow	Nudge(move) the current selection to the down 1-point of the current view
option-up arrow	Nudge(move) the current selection to the up 1-point of the current view
home	Move cursor to the begging of the current box or line
end	Move cursor to the end of the current box or line
cmd-home	Move cursor to the begging of the document
cmd-end	Move cursor to the end of the document
tab	Move cursor to the end of current box At the end of a box, move to the beginning of the next box
shift-tab	Move cursor to the beginning of current box At the beginning of a box, move to the end of the previous box
return, enter	Add a new line as a same level of current line In the middle of a box, breaks the line and move the right part to the next line

shift-return	Convert the TeX expression in the current line into equation, if any TeX expression found.
backspace (backward)	Delete the left character of the cursor If it is a template, select the box first and then delete it by another delete key
delete (forward delete)	Delete the right-side character of the cursor If it is a template box, just select the box
control	Display Magic shortcut key tool tips for Templates and Symbols palette, and User Item toolbar. This is enabled when Edit -> User Magic control key is checked.

3. Mouse actions

MathMagic supports most standard wheel mouses and Apple Magic mouse for scolling.

Actions

click within a document window
double click within a document window
triple click within a document window

vertical wheel

horizontal wheel or shift-vertical wheel

shift-click

option-click

Behavior

Move cursor to nearest insertion point

Select the continuous word or equation in the same level

Select the whole line including sub-level boxes

Scrolls vertically the current document window or Clips floating window where the mouse point is on, if the vertical scroll bar is active

Scrolls horizontally the current document window or Clips floating window where the mouse point is on, if the horizontal scroll bar is active

Select the part between the cursor location and clicked point

Select from the beginning of the line, to the clicked point if clicked in a normal box

Select the whole component part if clicked on a template structure or accent. This is very useful when selecting only the center line of fraction, Sigma(sum) or integral symbol of those templates, accents, and then Nudge the selection to make the position look better in some cases.

MMCenturyOldE - *Italic*

MMCenturyOldK

MMCenturyOldK - Italic

MMCenturyOldO - Italic

MMCenturyOldGreek

MMEtc

MMGreek

MMN_{Negate}

MMRelation

MMTextbook

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMTimes

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
RSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMTimes - Italic

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
RSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMa Century

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
NOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
|}~

MMa Century Italic

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
NOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
|}~

MMa CenturyB Italic

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
MNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{
|}~

MMa CenturyS

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
tuvwxyz{|}~

MMa CenturySS

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
stuvwxyz{|}~

MMa Etc

4. TeX codes supported by MathMagic

MathMagic supports these TeX codes when it imports and exports equation as a TeX format.

<code>\above</code>	<code>\abovewithdelims</code>	<code>\blacktriangleright</code>	<code>\bordermatrix</code>
<code>\acute</code>	<code>\acute</code>	<code>\bot</code>	<code>\bowtie</code>
<code>\aleph</code>	<code>\Alpha</code>	<code>\Box</code>	<code>\boxdot</code>
<code>\alpha</code>	<code>\amalg</code>	<code>\boxminus</code>	<code>\boxplus</code>
<code>\And</code>	<code>\angle</code>	<code>\boxtimes</code>	<code>\bprime</code>
<code>\approx</code>	<code>\approx</code>	<code>\bprime</code>	<code>\brace</code>
<code>\arrowhorizex</code>	<code>\arrowvertex</code>	<code>\braceleftbt</code>	<code>\braceleftex</code>
<code>\ast</code>	<code>\asympt</code>	<code>\braceleftmid</code>	<code>\bracelefttp</code>
<code>\atop</code>	<code>\atopwithdelims</code>	<code>\bracerightbt</code>	<code>\bracerightex</code>
<code>\backepsilon</code>	<code>\backsim</code>	<code>\bracerightmid</code>	<code>\bracerighttp</code>
<code>\backsimeq</code>	<code>\backslash</code>	<code>\brack</code>	<code>\bracketleftbt</code>
<code>\backtriangle</code>	<code>\bar</code>	<code>\bracketleftex</code>	<code>\bracketlefttp</code>
<code>\bar</code>	<code>\barwedge</code>	<code>\bracketrightbt</code>	<code>\bracketrightex</code>
<code>\Bbbk</code>	<code>\because</code>	<code>\bracketrighttp</code>	<code>\breve</code>
<code>\Beta</code>	<code>\beta</code>	<code>\breve</code>	<code>\buildrel</code>
<code>\beth</code>	<code>\between</code>	<code>\bullet</code>	<code>\Bumpeq</code>
<code>\bf</code>	<code>\big</code>	<code>\bumpeq</code>	<code>\Cap</code>
<code>\bigcap</code>	<code>\bigcap</code>	<code>\cap</code>	<code>\cases</code>
<code>\bigcirc</code>	<code>\bigcup</code>	<code>\cdot</code>	<code>\centerdot</code>
<code>\bigcup</code>	<code>\Big</code>	<code>\check</code>	<code>\check</code>
<code>\bigg</code>	<code>\Biggl</code>	<code>\Chi</code>	<code>\chi</code>
<code>\biggl</code>	<code>\Biggm</code>	<code>\choose</code>	<code>\circ</code>
<code>\biggm</code>	<code>\Biggr</code>	<code>\circeq</code>	<code>\circlearrowleft</code>
<code>\biggr</code>	<code>\Bigl</code>	<code>\circlearrowright</code>	<code>\circledast</code>
<code>\bigl</code>	<code>\Bigr</code>	<code>\circledcirc</code>	<code>\circleddash</code>
<code>\bigm</code>	<code>\bigodot</code>	<code>\circledS</code>	<code>\clubsuit</code>
<code>\bigodot</code>	<code>\bigoplus</code>	<code>\complement</code>	<code>\cong</code>
<code>\bigoplus</code>	<code>\bigotimes</code>	<code>\coprod</code>	<code>\coprod</code>
<code>\bigotimes</code>	<code>\Bigr</code>	<code>\cr</code>	<code>\Cup</code>
<code>\bigr</code>	<code>\bigsqcup</code>	<code>\cup</code>	<code>\curlyeqprec</code>
<code>\bigsqcup</code>	<code>\bigstar</code>	<code>\curlyeqsucc</code>	<code>\curlyvee</code>
<code>\bigtriangledown</code>	<code>\bigtriangleup</code>	<code>\curlywedge</code>	<code>\curvearrowleft</code>
<code>\biguplus</code>	<code>\biguplus</code>	<code>\curvearrowright</code>	<code>\dag</code>
<code>\bigvee</code>	<code>\bigvee</code>	<code>\dagger</code>	<code>\daleth</code>
<code>\bigwedge</code>	<code>\bigwedge</code>	<code>\dashv</code>	<code>\dbinom</code>
<code>\binom</code>	<code>\blacklozenge</code>	<code>\ddag</code>	<code>\ddagger</code>
<code>\blacksquare</code>	<code>\blacktriangle</code>	<code>\ddot</code>	<code>\ddot</code>
<code>\blacktriangledown</code>	<code>\blacktriangleleft</code>	<code>\dot</code>	<code>\dot</code>
		<code>\def</code>	<code>\Delta</code>

<code>\delta</code>	<code>\dfrac</code>	<code>\Im</code>	<code>\imath</code>
<code>\diag</code>	<code>\diagdown</code>	<code>\in</code>	<code>\infty</code>
<code>\diagup</code>	<code>\Diamond</code>	<code>\int</code>	<code>\int</code>
<code>\diamond</code>	<code>\diamondsuit</code>	<code>\integralbt</code>	<code>\integralex</code>
<code>\digamma</code>	<code>\displaylines</code>	<code>\integraltp</code>	<code>\intercal</code>
<code>\displaystyle</code>	<code>\div</code>	<code>\Iota</code>	<code>\iota</code>
<code>\divideontimes</code>	<code>\dot</code>	<code>\it</code>	<code>\jmath</code>
<code>\dot</code>	<code>\doteq</code>	<code>\Join</code>	<code>\Kappa</code>
<code>\doteqdot</code>	<code>\dotplus</code>	<code>\kappa</code>	<code>\Lambda</code>
<code>\doublebarwedge</code>	<code>\doubleprime</code>	<code>\lamda</code>	<code>\langle</code>
<code>\dover</code>	<code>\Downarrow</code>	<code>\langle</code>	<code>\lbrace</code>
<code>\downarrow</code>	<code>\downarrowhead</code>	<code>\lbracket</code>	<code>\lbracket</code>
<code>\downdownarrows</code>	<code>\downharpoonleft</code>	<code>\lbracket</code>	<code>\lceil</code>
<code>\downharpoonright</code>	<code>\dvert</code>	<code>\lceil</code>	<code>\leadsto</code>
<code>\ell</code>	<code>\emptyset</code>	<code>\left</code>	<code>\Leftarrow</code>
<code>\Epsilon</code>	<code>\epsilon</code>	<code>\leftarrow</code>	<code>\leftarrowhead</code>
<code>\eqalign</code>	<code>\eqalignno</code>	<code>\leftarrowtail</code>	<code>\leftharpoondown</code>
<code>\eqbase</code>	<code>\eqbottom</code>	<code>\leftharpoonup</code>	<code>\leftleftarrows</code>
<code>\eqcenter</code>	<code>\eqcirc</code>	<code>\Leftrightarrow</code>	<code>\leftrightarrows</code>
<code>\eqleft</code>	<code>\eqright</code>	<code>\leftrightarrows</code>	<code>\leftrightharpoons</code>
<code>\eqslantgtr</code>	<code>\eqslantless</code>	<code>\leftrightsquigarrow</code>	<code>\leftthreetimes</code>
<code>\eqtop</code>	<code>\equiv</code>	<code>\leq</code>	<code>\leqalignno</code>
<code>\Eta</code>	<code>\eta</code>	<code>\leqq</code>	<code>\leqslant</code>
<code>\eth</code>	<code>\exists</code>	<code>\lessapprox</code>	<code>\lessdot</code>
<code>\fallingdotseq</code>	<code>\Finv</code>	<code>\lesseqgtr</code>	<code>\lesseqqgtr</code>
<code>\flat</code>	<code>\font</code>	<code>\lessgtr</code>	<code>\lesssim</code>
<code>\forall</code>	<code>\frac</code>	<code>\lfloor</code>	<code>\lfloor</code>
<code>\from</code>	<code>\frown</code>	<code>\lhd</code>	<code>\limits</code>
<code>\fullstyle</code>	<code>\Game</code>	<code>\ll</code>	<code>\Lleftarrow</code>
<code>\Gamma</code>	<code>\gamma</code>	<code>\lll</code>	<code>\lnapprox</code>
<code>\gather</code>	<code>\gdef</code>	<code>\lneq</code>	<code>\lneqq</code>
<code>\geq</code>	<code>\geqq</code>	<code>\lnsim</code>	<code>\longleftarrow</code>
<code>\geqslant</code>	<code>\gg</code>	<code>\longleftarrowarrow</code>	<code>\longrightarrow</code>
<code>\ggg</code>	<code>\gimel</code>	<code>\looparrowleft</code>	<code>\looparrowright</code>
<code>\gnapprox</code>	<code>\gneq</code>	<code>\lozenge</code>	<code>\lparen</code>
<code>\gneqq</code>	<code>\gnsim</code>	<code>\lparen</code>	<code>\Lsh</code>
<code>\grave</code>	<code>\grave</code>	<code>\ltimes</code>	<code>\lvertneqq</code>
<code>\gtrapprox</code>	<code>\gtrdot</code>	<code>\mapsto</code>	<code>\mathbin</code>
<code>\gtreqless</code>	<code>\gtreqqless</code>	<code>\mathclose</code>	<code>\mathop</code>
<code>\gtrless</code>	<code>\gtrsim</code>	<code>\mathopen</code>	<code>\mathord</code>
<code>\gvertneqq</code>	<code>\halign</code>	<code>\mathpunct</code>	<code>\mathrel</code>
<code>\hat</code>	<code>\hat</code>	<code>\matrix</code>	<code>\measuredangle</code>
<code>\hbar</code>	<code>\heartsuit</code>	<code>\medspace</code>	<code>\mho</code>
<code>\hfill</code>	<code>\hookleftarrow</code>	<code>\mid</code>	<code>\mid</code>
<code>\hookrightarrow</code>	<code>\hslash</code>	<code>\midbar</code>	<code>\models</code>
<code>\iiint</code>	<code>\iiint</code>	<code>\mp</code>	<code>\Mu</code>
<code>\iint</code>	<code>\iint</code>	<code>\mu</code>	<code>\multimap</code>

<code>\natural</code>	<code>\ncong</code>	<code>\parenlefttex</code>	<code>\parenlefttp</code>
<code>\nearrow</code>	<code>\neg</code>	<code>\parenrightbt</code>	<code>\parenrighttex</code>
<code>\neq</code>	<code>\nexists</code>	<code>\parenrighttp</code>	<code>\partial</code>
<code>\ngeq</code>	<code>\ngeqq</code>	<code>\perp</code>	<code>\Phi</code>
<code>\ngeqslant</code>	<code>\ngtr</code>	<code>\phi</code>	<code>\Pi</code>
<code>\ni</code>	<code>\nLeftarrow</code>	<code>\pi</code>	<code>\pitchfork</code>
<code>\nLeftrightarrow</code>	<code>\nleftrightarrow</code>	<code>\pm</code>	<code>\pmatrix</code>
<code>\nleq</code>	<code>\nleqq</code>	<code>\prec</code>	<code>\precapprox</code>
<code>\nleqslant</code>	<code>\nless</code>	<code>\preccurlyeq</code>	<code>\preceq</code>
<code>\nmid</code>	<code>\noalign</code>	<code>\precnapprox</code>	<code>\precneqq</code>
<code>\nolimits</code>	<code>\not</code>	<code>\precnsim</code>	<code>\precsim</code>
<code>\notin</code>	<code>\nparallel</code>	<code>\prime</code>	<code>\prime</code>
<code>\nprec</code>	<code>\npreceq</code>	<code>\prod</code>	<code>\prod</code>
<code>\nrightarrow</code>	<code>\nrightarrow</code>	<code>\propto</code>	<code>\Psi</code>
<code>\nshortmid</code>	<code>\nshortparallel</code>	<code>\psi</code>	<code>\qquad</code>
<code>\nsim</code>	<code>\nsubseteq</code>	<code>\quad</code>	<code>\rangle</code>
<code>\nsubseteqq</code>	<code>\nsucc</code>	<code>\rangle</code>	<code>\rbrace</code>
<code>\nsucceq</code>	<code>\nsupseteq</code>	<code>\rbrace</code>	<code>\rbracket</code>
<code>\nsupseteqq</code>	<code>\ntriangleleft</code>	<code>\rbracket</code>	<code>\rceil</code>
<code>\ntrianglelefteq</code>	<code>\ntriangleright</code>	<code>\rceil</code>	<code>\Re</code>
<code>\ntrianglerighteq</code>	<code>\Nu</code>	<code>\rfloor</code>	<code>\rfloor</code>
<code>\nu</code>	<code>\nVDash</code>	<code>\rhd</code>	<code>\Rho</code>
<code>\nVdash</code>	<code>\nvDash</code>	<code>\rho</code>	<code>\right</code>
<code>\nvdash</code>	<code>\nwarrow</code>	<code>\rightarrow</code>	<code>\rightarrow</code>
<code>\odot</code>	<code>\of</code>	<code>\rightarrowhead</code>	<code>\rightarrowtail</code>
<code>\oiint</code>	<code>\oiint</code>	<code>\rightharpoondown</code>	<code>\rightharpoonup</code>
<code>\oint</code>	<code>\oint</code>	<code>\rightharpoonleft</code>	<code>\rightharpoonright</code>
<code>\oint</code>	<code>\oint</code>	<code>\rightharpoonright</code>	<code>\rightsquigarrow</code>
<code>\Omega</code>	<code>\omega</code>	<code>\rightthreetimes</code>	<code>\risingdotseq</code>
<code>\Omicron</code>	<code>\omicron</code>	<code>\rm</code>	<code>\root</code>
<code>\ominus</code>	<code>\operatorname</code>	<code>\rparen</code>	<code>\rparen</code>
<code>\operatornamewithlimits</code>	<code>\oplus</code>	<code>\Rrightarrow</code>	<code>\Rsh</code>
<code>\oslash</code>	<code>\otimes</code>	<code>\rtimes</code>	<code>\S</code>
<code>\over</code>	<code>\overbrace</code>	<code>\sb</code>	<code>\scriptarrowhorizex</code>
<code>\overbrace</code>	<code>\overbracebt</code>	<code>\scriptarrowvertex</code>	<code>\scriptdownarrowhead</code>
<code>\overbraceex</code>	<code>\overbracecmid</code>	<code>\scriptleftarrowhead</code>	<code>\scriptrightarrowhead</code>
<code>\overbracket</code>	<code>\overbracket</code>	<code>\scriptscriptstyle</code>	<code>\scriptstyle</code>
<code>\overbracket</code>	<code>\overbracketbt</code>	<code>\scriptsymbolstyle</code>	<code>\scriptuparrowhead</code>
<code>\overbracketex</code>	<code>\overbrackettp</code>	<code>\shortparallel</code>	<code>\Sigma</code>
<code>\overeq</code>	<code>\overleftarrow</code>	<code>\sigma</code>	<code>\sim</code>
<code>\overleftrightarrow</code>	<code>\overline</code>	<code>\simeq</code>	<code>\size</code>
<code>\overparen</code>	<code>\overparen</code>	<code>\skew</code>	<code>\slash</code>
<code>\overparenbt</code>	<code>\overparenex</code>	<code>\smallfrown</code>	<code>\smallint</code>
<code>\overparentp</code>	<code>\overrightarrow</code>	<code>\smallsetminus</code>	<code>\smallsmile</code>
<code>\oversetbrace</code>	<code>\overwithdelims</code>	<code>\smile</code>	<code>\sp</code>
<code>\P</code>	<code>\parallel</code>	<code>\space</code>	<code>\spadesuit</code>
<code>\parallel</code>	<code>\parenleftbt</code>	<code>\sphericalangle</code>	<code>\sqcap</code>

<code>\sqcup</code>	<code>\sqrt</code>	<code>\updownarrow</code>	<code>\upharpoonleft</code>
<code>\sqsubset</code>	<code>\sqsubseteq</code>	<code>\upharpoonright</code>	<code>\uplus</code>
<code>\sqsupset</code>	<code>\sqsupseteq</code>	<code>\Upsilon</code>	<code>\upsilon</code>
<code>\square</code>	<code>\star</code>	<code>\upuparrows</code>	<code>\varepsilon</code>
<code>\struct</code>	<code>\Subset</code>	<code>\varkappa</code>	<code>\varnothing</code>
<code>\subset</code>	<code>\subseteq</code>	<code>\varphi</code>	<code>\varpi</code>
<code>\subseteqq</code>	<code>\subsetneq</code>	<code>\varpropto</code>	<code>\varrho</code>
<code>\subsetneqq</code>	<code>\succ</code>	<code>\varsigma</code>	<code>\varsubsetneq</code>
<code>\succapprox</code>	<code>\succcurlyeq</code>	<code>\varsubsetneqq</code>	<code>\varsupsetneq</code>
<code>\succeq</code>	<code>\succnapprox</code>	<code>\varsupsetneqq</code>	<code>\vartheta</code>
<code>\succeqq</code>	<code>\succsim</code>	<code>\vartriangle</code>	<code>\vartriangleleft</code>
<code>\succsim</code>	<code>\sum</code>	<code>\vartriangleright</code>	<code>\Vdash</code>
<code>\sum</code>	<code>\Supset</code>	<code>\VDash</code>	<code>\vdash</code>
<code>\supset</code>	<code>\supseteq</code>	<code>\vec</code>	<code>\vec</code>
<code>\supseteqq</code>	<code>\supsetneq</code>	<code>\vee</code>	<code>\veebar</code>
<code>\supsetneqq</code>	<code>\surd</code>	<code>\Vert</code>	<code>\vert</code>
<code>\swarrow</code>	<code>\symbolstyle</code>	<code>\Vdash</code>	<code>\wedge</code>
<code>\Tau</code>	<code>\tau</code>	<code>\xint</code>	<code>\xiiiint</code>
<code>\tbinom</code>	<code>\tdiag</code>	<code>\xoint</code>	<code>\xoint</code>
<code>\text</code>	<code>\textstyle</code>	<code>\Zeta</code>	<code>\zeta</code>
<code>\tfrac</code>	<code>\therefore</code>		
<code>\Theta</code>	<code>\theta</code>		
<code>\thickapprox</code>	<code>\thickfrac</code>		
<code>\thicksim</code>	<code>\thickspace</code>		
<code>\thinspace</code>	<code>\tilde</code>		
<code>\tilde</code>	<code>\times</code>		
<code>\to</code>	<code>\top</code>		
<code>\tover</code>	<code>\triangle</code>		
<code>\triangledown</code>	<code>\triangleleft</code>		
<code>\trianglelefteq</code>	<code>\triangleq</code>		
<code>\triangleright</code>	<code>\trianglerighteq</code>		
<code>\triangleup</code>	<code>\tripleprime</code>		
<code>\twoheadleftarrow</code>	<code>\twoheadrightarrow</code>		
<code>\underbrace</code>	<code>\underbrace</code>		
<code>\underbracebt</code>	<code>\underbraceex</code>		
<code>\underbracemid</code>	<code>\underbracetp</code>		
<code>\underbracket</code>	<code>\underbracket</code>		
<code>\underbracketbt</code>	<code>\underbracketex</code>		
<code>\underbrackettp</code>	<code>\undereq</code>		
<code>\underleftarrow</code>	<code>\underleftrightharrow</code>		
<code>\underline</code>	<code>\underparen</code>		
<code>\underparen</code>	<code>\underparenbt</code>		
<code>\underparenex</code>	<code>\underparentp</code>		
<code>\underrightharrow</code>	<code>\undersetbrace</code>		
<code>\unlhd</code>	<code>\unrhd</code>		
<code>\Uparrow</code>	<code>\uparrow</code>		
<code>\uparrowhead</code>	<code>\Updownarrow</code>		

4. TeX codes supported by MathMagic

MathMagic supports these TeX codes when it imports and exports equation as a TeX format.

her

<code>\aleph</code>	<code>\chi</code>	<code>\Downarrow</code>	<code>\gtrdot</code>
<code>\Alpha</code>	<code>\circ</code>	<code>\downarrow</code>	<code>\gtreqless</code>
<code>\alpha</code>	<code>\circeq</code>	<code>\downdownarrows</code>	<code>\gtreqqless</code>
<code>\angle</code>	<code>\circlearrowleft</code>	<code>\downharpoonleft</code>	<code>\gtrless</code>
<code>\approx</code>	<code>\circlearrowright</code>	<code>\downharpoonright</code>	<code>\gtrsim</code>
<code>\approxeq</code>	<code>\circledast</code>	<code>\ell</code>	<code>\gvertneqq</code>
<code>\ast</code>	<code>\circledcirc</code>	<code>\emptyset</code>	<code>\hbar</code>
<code>\asymp</code>	<code>\circleddash</code>	<code>\Epsilon</code>	<code>\heartsuit</code>
<code>\backcong</code>	<code>\circledS</code>	<code>\epsilon</code>	<code>\hexagon</code>
<code>\backsim</code>	<code>\clubsuit</code>	<code>\eqcirc</code>	<code>\hexagon</code>
<code>\backsimeq</code>	<code>\complement</code>	<code>\eqslantgtr</code>	<code>\hslash</code>
<code>\barwedge</code>	<code>\cong</code>	<code>\eqslantless</code>	<code>\Im</code>
<code>\Bbbk</code>	<code>\Cup</code>	<code>\equiv</code>	<code>\imath</code>
<code>\because</code>	<code>\cup</code>	<code>\Eta</code>	<code>\in</code>
<code>\Beta</code>	<code>\curlyeqprec</code>	<code>\eta</code>	<code>\infty</code>
<code>\beta</code>	<code>\curlyeqsucc</code>	<code>\eth</code>	<code>\int</code>
<code>\beth</code>	<code>\curlyvee</code>	<code>\exists</code>	<code>\intercal</code>
<code>\between</code>	<code>\curlywedge</code>	<code>\fallingdotseq</code>	<code>\Iota</code>
<code>\bigcirc</code>	<code>\curvearrowleft</code>	<code>\Finv</code>	<code>\iota</code>
<code>\bigrhat</code>	<code>\curvearrowright</code>	<code>\flat</code>	<code>\jmath</code>
<code>\bigstar</code>	<code>\dag</code>	<code>\forall</code>	<code>\Join</code>
<code>\bigtriangledown</code>	<code>\daleth</code>	<code>\frown</code>	<code>\Kappa</code>
<code>\bigtriangleup</code>	<code>\dashv</code>	<code>\Game</code>	<code>\kappa</code>
<code>\blacklozenge</code>	<code>\ddag</code>	<code>\Gamma</code>	<code>\Lambda</code>
<code>\blacksquare</code>	<code>\ddots</code>	<code>\gamma</code>	<code>\lambda</code>
<code>\blacksquare</code>	<code>\Delta</code>	<code>\ge</code>	<code>\langle</code>
<code>\bot</code>	<code>\delta</code>	<code>\geneuro</code>	<code>\largecircle</code>
<code>\bowtie</code>	<code>\Diamond</code>	<code>\geneuronarrow</code>	<code>\largediamond</code>
<code>\boxdot</code>	<code>\diamond</code>	<code>\geneuronarrow</code>	<code>\largesquare</code>
<code>\boxminus</code>	<code>\diamondsuit</code>	<code>\geq</code>	<code>\largetrianglerup</code>
<code>\boxplus</code>	<code>\div</code>	<code>\geqq</code>	<code>\lcurvearrowse</code>
<code>\boxtimes</code>	<code>\divideontimes</code>	<code>\geqslant</code>	<code>\le</code>
<code>\bullet</code>	<code>\doteq</code>	<code>\gg</code>	<code>\leadsto</code>
<code>\Bumpeq</code>	<code>\doteqdot</code>	<code>\ggg</code>	<code>\Leftarrow</code>
<code>\bumpeq</code>	<code>\dotplus</code>	<code>\gimel</code>	<code>\leftarrow</code>
<code>\Cap</code>	<code>\dotsb</code>	<code>\gnapprox</code>	<code>\leftarrowtail</code>
<code>\cap</code>	<code>\dotsc</code>	<code>\gneq</code>	<code>\leftharpoondown</code>
<code>\cdot</code>	<code>\dotsi</code>	<code>\gneqq</code>	<code>\leftharpoonup</code>
<code>\cdots</code>	<code>\dotsm</code>	<code>\gnsim</code>	<code>\leftleftarrows</code>
<code>\Chi</code>	<code>\doubleprime</code>	<code>\gtrapprox</code>	<code>\Leftrightarrow</code>

<code>\leftrightharpoonarrow</code>	<code>\Mu</code>	<code>\ntriangleright</code>	<code>\Re</code>
<code>\leftrightharpoons</code>	<code>\mu</code>	<code>\ntrianglerighteq</code>	<code>\rhd</code>
<code>\leftrightharpoons</code>	<code>\multimap</code>	<code>\Nu</code>	<code>\Rho</code>
<code>\leftrightsquigarrow</code>	<code>\nabla</code>	<code>\nu</code>	<code>\rho</code>
<code>\leftthreetimes</code>	<code>\natural</code>	<code>\nupdownline</code>	<code>\rightangle</code>
<code>\leq</code>	<code>\ncong</code>	<code>\nVDash</code>	<code>\rightarrow</code>
<code>\leqq</code>	<code>\ne</code>	<code>\nVdash</code>	<code>\rightarrowtail</code>
<code>\leqslant</code>	<code>\nearrow</code>	<code>\nvDash</code>	<code>\rightarrowtail</code>
<code>\lessapprox</code>	<code>\neg</code>	<code>\nvdash</code>	<code>\rightharpoondown</code>
<code>\lessdot</code>	<code>\neq</code>	<code>\nwarrow</code>	<code>\rightharpoonup</code>
<code>\lesseqgtr</code>	<code>\neswarrow</code>	<code>\nwsearrow</code>	<code>\rightleftarrows</code>
<code>\lesseqgtr</code>	<code>\nexists</code>	<code>\odot</code>	<code>\rightleftharpoons</code>
<code>\lessgtr</code>	<code>\ngeq</code>	<code>\Omega</code>	<code>\rightrightarrows</code>
<code>\lesssim</code>	<code>\ngeqq</code>	<code>\omega</code>	<code>\rightsquigarrow</code>
<code>\lhd</code>	<code>\ngeqslant</code>	<code>\Omicron</code>	<code>\rightthreetimes</code>
<code>\ll</code>	<code>\ngtr</code>	<code>\omicron</code>	<code>\risingdotseq</code>
<code>\Lleftarrow</code>	<code>\ni</code>	<code>\ominus</code>	<code>\Rrightarrow</code>
<code>\lll</code>	<code>\nLeftarrow</code>	<code>\oplus</code>	<code>\Rsh</code>
<code>\lnapprox</code>	<code>\nleftarrow</code>	<code>\oslash</code>	<code>\rtimes</code>
<code>\lneq</code>	<code>\nLeftrightarrow</code>	<code>\otimes</code>	<code>\S</code>
<code>\lneqq</code>	<code>\nleftrightharpoonarrow</code>	<code>\P</code>	<code>\searrow</code>
<code>\lnsim</code>	<code>\nleq</code>	<code>\parallel</code>	<code>\sharp</code>
<code>\longleftarrow</code>	<code>\nleqq</code>	<code>\partial</code>	<code>\shortmid</code>
<code>\Longleftarrow</code>	<code>\nleqslant</code>	<code>\pentagon</code>	<code>\shortparallel</code>
<code>\Longleftrightharpoonarrow</code>	<code>\nless</code>	<code>\pentagon</code>	<code>\Sigma</code>
<code>\longleftrightharpoonarrow</code>	<code>\nmid</code>	<code>\perp</code>	<code>\sigma</code>
<code>\longrightarrow</code>	<code>\notequiv</code>	<code>\Phi</code>	<code>\sim</code>
<code>\Longrightarrow</code>	<code>\notequiv</code>	<code>\phi</code>	<code>\simeq</code>
<code>\looparrowleft</code>	<code>\notin</code>	<code>\Pi</code>	<code>\smallfrown</code>
<code>\looparrowright</code>	<code>\notni</code>	<code>\pi</code>	<code>\smallsmile</code>
<code>\lozenge</code>	<code>\notsmallin</code>	<code>\pm</code>	<code>\smile</code>
<code>\Lsh</code>	<code>\nparallel</code>	<code>\pounds</code>	<code>\spadesuit</code>
<code>\ltimes</code>	<code>\nprec</code>	<code>\prec</code>	<code>\sphericalangle</code>
<code>\lvertneqq</code>	<code>\npreceq</code>	<code>\precapprox</code>	<code>\sqcap</code>
<code>\mapsto</code>	<code>\nrightarrow</code>	<code>\preccurlyeq</code>	<code>\sqcup</code>
<code>\mbox{\textquotedblleft}</code>	<code>\nshortmid</code>	<code>\preceq</code>	<code>\sqsubset</code>
<code>\mbox{\textquotedblright}</code>	<code>\nshortparallel</code>	<code>\precnapprox</code>	<code>\sqsubseteq</code>
<code>\mbox{\textquoteleft}</code>	<code>\nsim</code>	<code>\precneqq</code>	<code>\sqsupset</code>
<code>\mbox{\textquoteright}</code>	<code>\nsubseteq</code>	<code>\precnsim</code>	<code>\sqsupseteq</code>
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<code>\medcircle</code>	<code>\nsucc</code>	<code>\prime</code>	<code>\square</code>
<code>\medtriangleleft</code>	<code>\nsucc</code>	<code>\propto</code>	<code>\squaredots</code>
<code>\medtriangleright</code>	<code>\nsucceq</code>	<code>\Psi</code>	<code>\star</code>
<code>\mho</code>	<code>\nsupseteq</code>	<code>\psi</code>	<code>\Subset</code>
<code>\mid</code>	<code>\nsupseteqq</code>	<code>\rangle</code>	<code>\subset</code>
<code>\models</code>	<code>\ntriangleleft</code>	<code>\rcurvearrowne</code>	<code>\subseteq</code>
<code>\mp</code>	<code>\ntrianglelefteq</code>	<code>\rcurvearrowse</code>	<code>\subseteqq</code>

<code>\subsetneq</code>	<code>\upuparrows</code>
<code>\subsetneqq</code>	<code>\upVdash</code>
<code>\succ</code>	<code>\varangle</code>
<code>\succapprox</code>	<code>\varepsilon</code>
<code>\succcurlyeq</code>	<code>\varnothing</code>
<code>\succeq</code>	<code>\varparallel</code>
<code>\succnapprox</code>	<code>\varphi</code>
<code>\succneqq</code>	<code>\varpi</code>
<code>\succnsim</code>	<code>\varsigma</code>
<code>\succsim</code>	<code>\varsubsetneq</code>
<code>\sum</code>	<code>\varsubsetneqq</code>
<code>\Supset</code>	<code>\varsubsetneqq</code>
<code>\supset</code>	<code>\varsupsetneq</code>
<code>\supseteq</code>	<code>\varsupsetneqq</code>
<code>\supseteqq</code>	<code>\varsupsetneqq</code>
<code>\supsetneq</code>	<code>\vartheta</code>
<code>\supsetneqq</code>	<code>\vartriangle</code>
<code>\surd</code>	<code>\Vdash</code>
<code>\swarrow</code>	<code>\VDash</code>
<code>\Tau</code>	<code>\vdash</code>
<code>\tau</code>	<code>\vdots</code>
<code>\textasciitilde</code>	<code>\vee</code>
<code>\therefore</code>	<code>\veebar</code>
<code>\Theta</code>	<code>\Vert</code>
<code>\theta</code>	<code>\vert</code>
<code>\times</code>	<code>\wedge</code>
<code>\top</code>	<code>\wp</code>
<code>\triangle</code>	<code>\wr</code>
<code>\triangledown</code>	<code>\Xi</code>
<code>\triangleleft</code>	<code>\xi</code>
<code>\triangleleq</code>	<code>\Zeta</code>
<code>\triangleright</code>	<code>\zeta</code>
<code>\tripleprime</code>	
<code>\twoheadleftarrow</code>	
<code>\twoheadrightarrow</code>	
<code>\udots</code>	
<code>\unlhd</code>	
<code>\unrhd</code>	
<code>\Uparrow</code>	
<code>\uparrow</code>	
<code>\Updownarrow</code>	
<code>\updownarrow</code>	
<code>\upharpoonleft</code>	
<code>\upharpoonright</code>	
<code>\uplus</code>	
<code>\Upsilon</code>	
<code>\upsilon</code>	

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