

The ultimate Equation Editor on the planet!

User Guide

MathMagic Personal Edition

MathMagic Pro Edition

MathMagic Prime Edition

MathMagic Lite Edition

For Windows

v7.x

English

rev. 10

2014.12

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 over 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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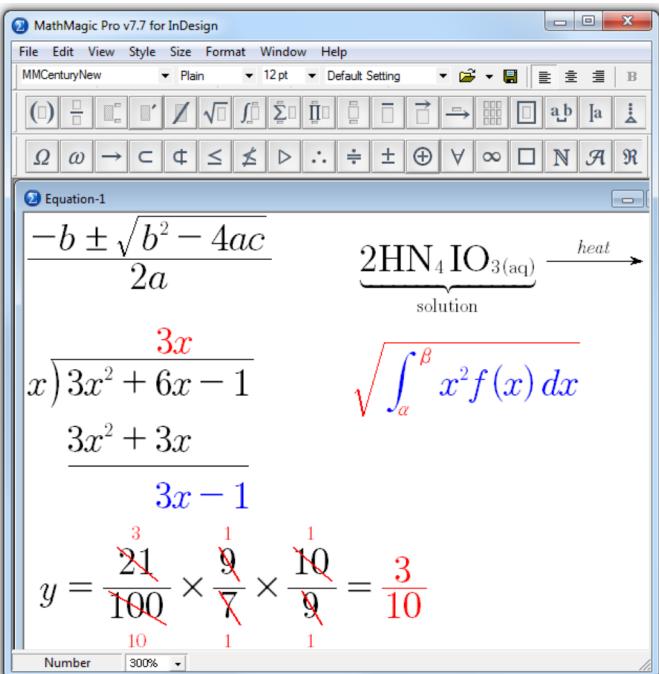
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I. Introduction to MathMagic

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.

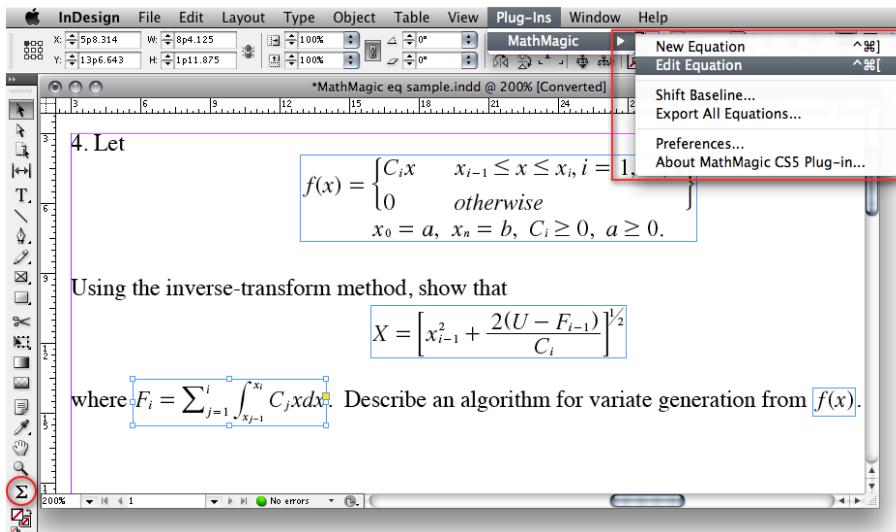


[Image 1-1] MathMagic main interface (MathMagic Pro Edition)

MathMagic Personal Edition is a stand-alone, general-purpose equation editor that is appropriate for individual users, such as students, teachers, professors, engineers, and so on.

MathMagic Pro Edition for Adobe InDesign comes with MathMagic plug-ins for InDesign, more fonts and more advanced features for high-end publishers, on top of all the features of MathMagic Personal Edition. 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. MathMagic Pro is ideal for professional editing and publishing carried out with desktop publishing software such as 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 for a certain clients, as well as various other features in addition to the functions of MathMagic Pro Edition.



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

MathMagic Lite Edition is basically a simplified version of MathMagic Personal Edition, which is available for free. However, it comes with much of the core equation editing features to handle most of K12 Math and higher education Math. Some features such as equation style conversion, batch conversion of multiple equations into another format, saving a large sized equation, applying color, may not be available in MathMagic Lite. Each version may have some different features so please refer to the latest ReadMe document or **Feature Comparison Table**, which is available from the MathMagic.com download page.

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 Mac OS X, 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 SVG, EPS, PDF, TeX, MathML, WMF, PNG, JPEG, GIF, BMP, and more

Equations can be saved in WMF format, a standard image format for Windows, to be utilized on almost all

Windows applications such as word processors and graphics software. The PNG format, largely used on the Web, is also supported. Equations can also be saved in SVG, MathML, 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 journals with ease. As well, equations created on MathMagic can be saved 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 naming Macro options. This greatly improves productivity for customers who edit equations professionally.

1.8 User Item Toolbar and Equation Clips window

MathMagic allows you to define and use a customized palette comprised of frequently used items. The User Item Toolbar allows you to register the Templates and Symbols 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 Data v7*" folder in the *My Documents* folder under the current User's Documents folder, and you can share those equation clips 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 (pt), q, millimetres, inches, pica 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 its visual interface thru the Preferences panel.

All in your preferred units including point, q, mm, inch, pica 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 your own Color swatches 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 or Web color. 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.

iOS and Android OS versions with limited features are also available.

* **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 allows you to quickly create and edit equations right within InDesign documents with ease, without going thru the Import/Export or manual Placing and baseline adjustment.

* **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.

This product was **discontinued**.

* **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 custom tuned forms of equations are optimized for publishers in Korea and Japan.

* **MathMagic Lite Edition**

This is a free version of MathMagic equation editor. It comes with a simplified UI and features. But the feature is more than enough for most K12 and post-secondary higher education needs. Some export options are not supported in MathMagic Lite Edition.

* **MathMagic based Custom Editions**

In addition, there are products customized for a certain software vendors who bundle MathMagic with their own software products and solutions, for some specific publishers, and products for QuarkXPress 3.3-4.1 in Mac OS 9/Classic, and products developed for Java.

Products for other operating systems and other vendors can also be made available over time.

All MathMagic installers come with a fully functional Free Trial period, if not free, 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 application, 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.x or newer for Windows runs on Windows XP SP2 or later, including Windows Vista and Windows 7 & 8.

- **Hardware:** Intel Pentium Processor or equivalent
- **OS:** Windows XP SP2 or newer, including Windows Vista, Windows 7, Windows 8
- **Hard Disk:** Minimum 30 MB of free space for installation
- **Video:** 800 x 600 or higher in resolution (recommended)
- **Internet:** Internet connection is recommended for automatic Update checking but NOT Required.

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

4. MathMagic Feature Comparison Table

The following is a comparison of the main features of MathMagic products (*based on v7.7, as of 2014.12*):

Features \ Products	MathMagic Personal	MathMagic Pro	MathMagic Prime	MathMagic Lite
Platform	Mac OS X, Windows	Mac OS X, Windows	Mac OS X, Windows	Mac OS X, Win
Main Components	1 App, about 100 bundled fonts	1 App, Plug-ins, 150+ fonts	1 App, Plug-ins, 200+ fonts	1 App, about 50 fonts
Supported InDesign Plug-ins	No	2.0 ~ (Mac), CS3 ~ (Win)	Varies	No
License Type	User Based License	Locked to the registered PC	Locked to registered PC or USB Key	Free
EPS Export	No	Color EPS (CMYK, RGB), Gray EPS	Color EPS (CMYK, RGB), Gray EPS	No
Spot color / Overprint Control	No	Yes	Yes	No
PDF size	Small size	No limit	No limit	Not supported
Baseline Savvy EPS	No	Yes	Yes	No
MathML / LaTeX embedding in EPS	No	No	Supported (Optional)	No
Supported Formats (Read / Save)	LaTeX, Plain TeX, WikiTeX, MathML, SVG, MathType, MS Word Equation, EPS, WMF, PNG, JPG, GIF, BMP, AsciiMath, TTS, ...	LaTeX, Plain TeX, WikiTeX, MathML, SVG, MathType, MS Word Equation, EPS, WMF, PNG, JPG, GIF, BMP, AsciiMath, TTS, ...	LaTeX, Plain TeX, WikiTeX, MathML, SVG, MathType, MS Word Equation, EPS, WMF, PNG, JPG, GIF, BMP, AsciiMath, TTS, ...	Same or Similar as Personal
(some are platform specific)				
Batch conversion	up to 10 files	Unlimited	Unlimited	Not supported
Default Templates in palettes	Over 300 for All levels of Math	Same as Personal	Same as Personal	About 200 for K12 & some Post-secondary level
Default Symbols in palettes	About 600 for All levels of Math	Same as Personal	Same as Personal	About 500 for K12 & some Post-secondary level
Ruler Units	pt, q, mm, inch, %, pica	pt, q, mm, inch, %, pica	pt, q, mm, inch, %, pica	
Nudge Maximum Distance	Short distance (10pt)	Medium distance (50pt)	Long distance (100pt)	Not supported
Custom Tuned Spacing & Factory	No	No	Available	No
Custom Styles for Sub/Sub-sub boxes	No	Yes	Yes	No
Customizable TeX spacing rule	Limited	Yes	Yes	Limited
User defined size for Large Operator & Per Style	No	Yes	Yes	No
Regular Price (US\$)	US\$69	\$499 (\$695 with 2-year Free upgrade)	Depends on the Configuration	Free
Academic/Government Price (US\$)	US\$49	\$299 (\$399 with 2-year Free upgrade)	Depends on the Configuration	Free
1-month ~ 6-month Subscription price	\$10 ~ \$30	\$100.00 / \$200.00	Not Available	Free
School / Campus-wide License	Available	No	No	Free
Custom Dev. Service / Bundling	Available	Available / Call	Available / Call	Available

Most other general equation editing UI and features remain same or similiar among MathMagic Personal, Pro, and Prime Editions.

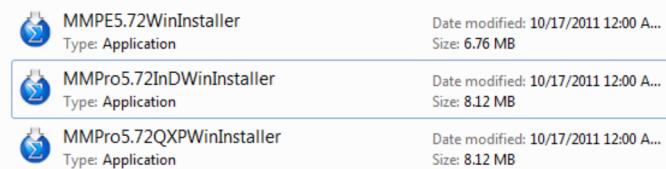
MathType™ is a trademark of Design Science, Inc. InDesign™ is a trademark of Adobe Systems Inc. QuarkXPress® is a registered trademark of Quark, Inc. All other trademarks are the property of their respective owners.

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

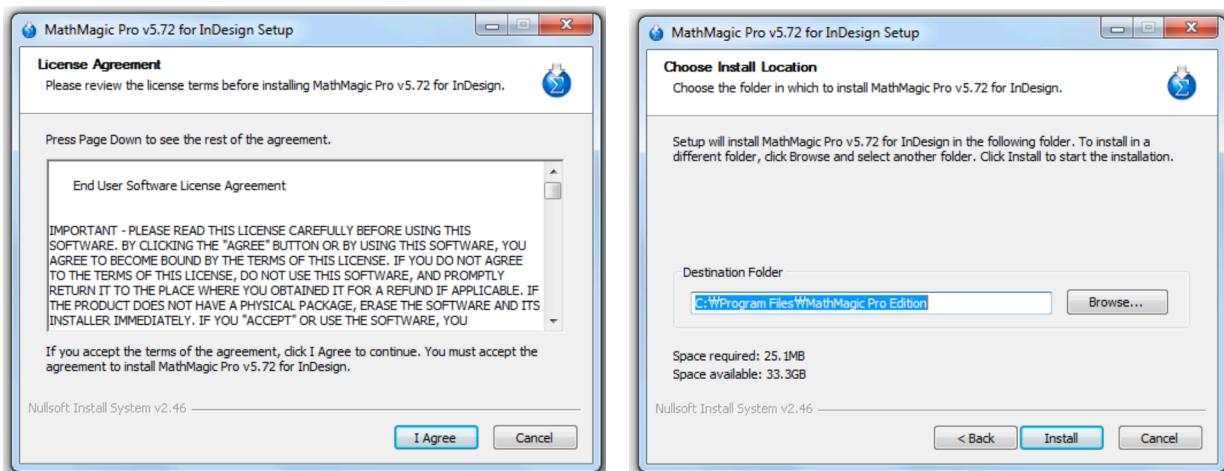
MathMagic for Windows comes with an installer for each product.



If a physical package with a CD-ROM was purchased, please insert the Installer CD to the CD-ROM drive and run the Installer.

If MathMagic installer was downloaded or copied from another computer, please Unzip the installer and then run it.

MathMagic installer may display the License Agreement and other user options before it starts to install, as shown below:



[Image 2-1] MathMagic Installer screens (MathMagic Pro Edition)

NOTE: MathMagic installer may display some user interface, such as buttons and title bar, in the current local language. However, the installer will only install English version of MathMagic.

Once the installation is completed, the following files (folders) will be installed or created under the following paths:

\Program Files\MathMagic Personal(or Pro) Edition\ (32-bit OS)

\Program Files (x86)\MathMagic Personal(or Pro) Edition\ (64-bit OS)

- MathMagic Personal or MathMagic Pro application
- Sample file, MathMagic Fonts folder
- InDesign Plug-ins or XTensions folder (Pro Edition only)
- ReadMe First file and other documents
- MathMagic User Data v7 folder

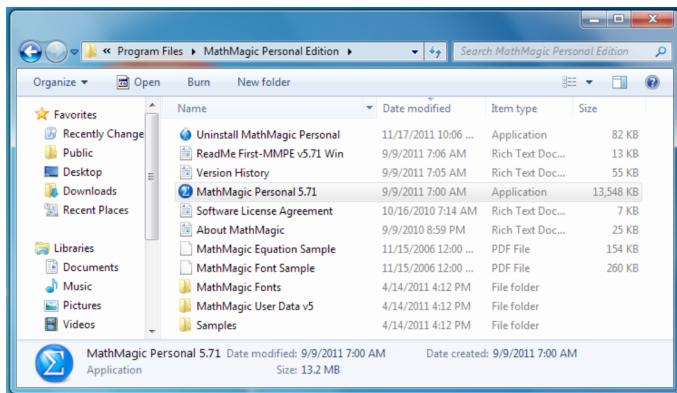
\Windows\Fonts\

- MathMagic Fonts (MM~, MMa~)

\Windows\System32\

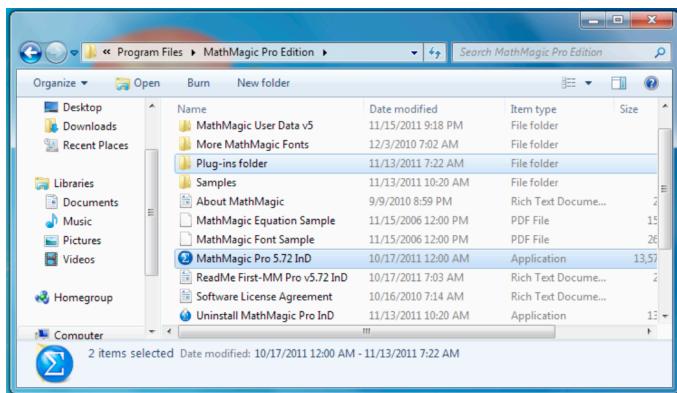
- Some DLL files and other components

In the case of MathMagic Personal Edition, the installer will finish the installation process completely, without requiring further manual moving or installation of files.



[Image 2-2] MathMagic Personal Edition folder configuration after installation

In the case of MathMagic Pro Edition or MathMagic Prime Edition, the Plug-in files which correspond to the version of Adobe InDesign which you are currently using must be manually installed as well. For more details on selecting the proper path and installing the files, please refer to the "ReadMe First ~" file provided separately, or please refer to *III. 10 Using MathMagic Pro Editions*.



[Image 2-3] MathMagic Pro Edition folder configuration after installation

* **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 to make new fonts available for all other applications and drivers.

2. Uninstalling

As with the installation process, the installed files of MathMagic can easily be removed by running the Uninstaller application, installed in the following path.

```
\Program Files\MathMagic Pro Edition\Uninstall MathMagic Pro InD      or  
\Program Files\MathMagic Personal Edition\Uninstall MathMagic Personal
```



[Image 2-4] MathMagic Uninstaller application

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-assigned** in the respective Preferences settings dialog box in InDesign.

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** menu, 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/>

The screenshot shows a web browser window for the MathMagic website. The title bar reads "[Math+Magic] - Product Registration for better customer support!". The address bar shows the URL <http://www.mathmagic.com/support/register.html>. The main content area is titled "PRODUCT REGISTRATION". It contains a message: "Thank you for registering your copy with us. Please fill out the following form and click Submit button." Below this are several input fields:

- * User Name :
- Company / Organization :
- * Email Address :
- Your Country : other
- Phone Number :
- * Platform :
- * Purchased Product :
- * Customer Number :
("Customer Number" is located in your License email if purchased online, or at the back of the License card if purchased a physical box.)
- System ID :

[Image 2-5] 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.

System ID is a unique identification of your computer that MathMagic generates based on its hardware assets and configuration.

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

5. Entering Your License Code

If you are using **MathMagic Lite**, please skip this section. MathMagic Lite is a free version and does not have the Authorization dialog. It runs without any License code.

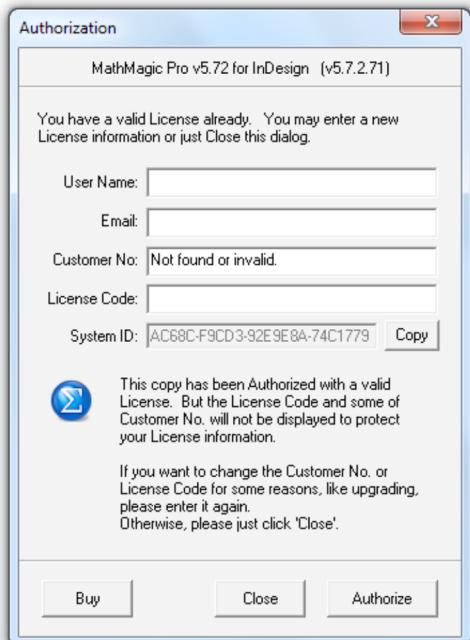
Once MathMagic is installed and launched for the first time, the following window will be displayed for the authorization of the software.

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, some of the feature may be disabled or you may need to 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 DEMO watermark.



[Image 2-6] MathMagic 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:

MathMagic Pro: XXXX-XXXX-XXXX-XXXX-XXXX
MathMagic Personal: 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 web page 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-XXXXXX](#)

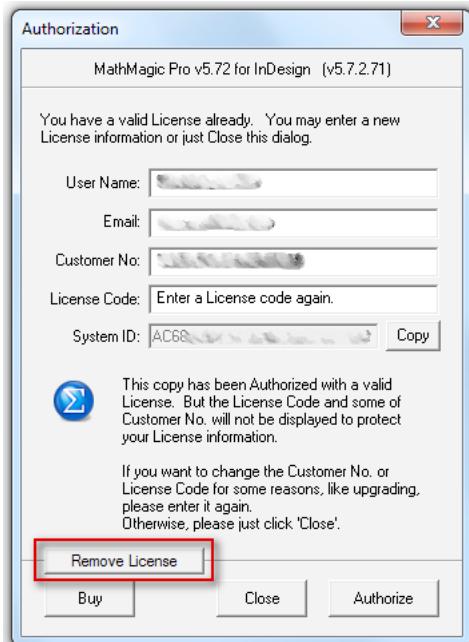
6. Changing or Removing your License code

If you are using **MathMagic Lite**, please skip this section. MathMagic Lite is a free version and does not have the Authorization dialog. It runs without any 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.

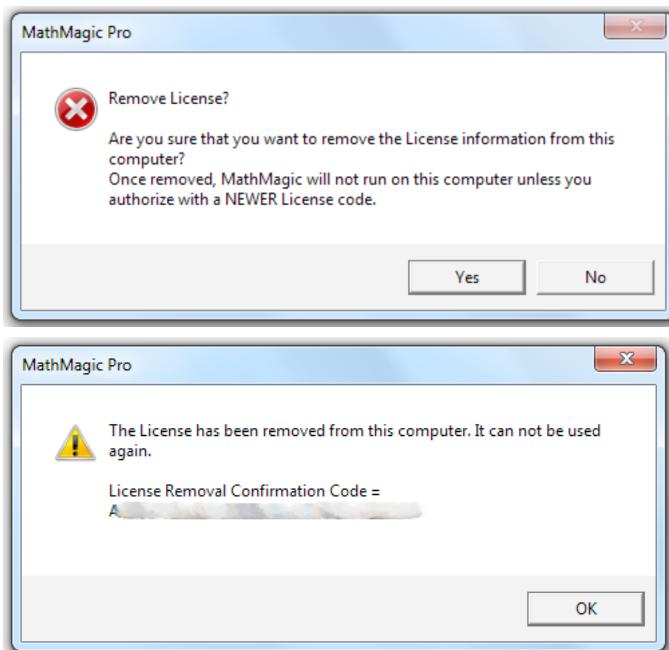
You can enter a new User name, Email address, Customer Number, or License Code to change the ownership or to extend your Free Upgrade period or Subscription period.



[Image 2-7] 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 **while holding down 'shift' key or 'alt' key** to enable the "**Remove License**" button.

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



[Image 2-8] Confirmation dialog after removing a license

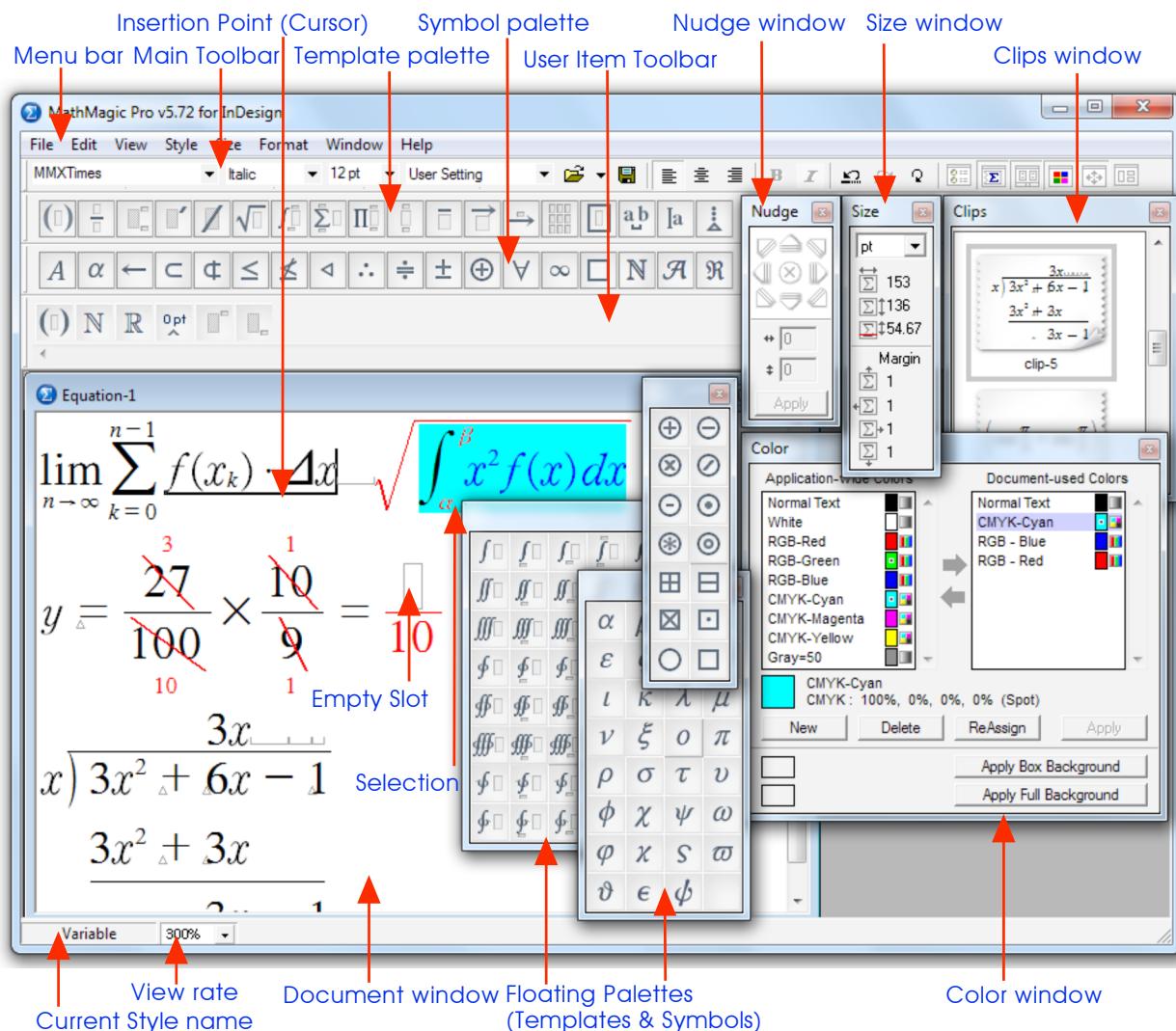
Once a License has been removed from a computer, the same License code can not be used on the same computer again.

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

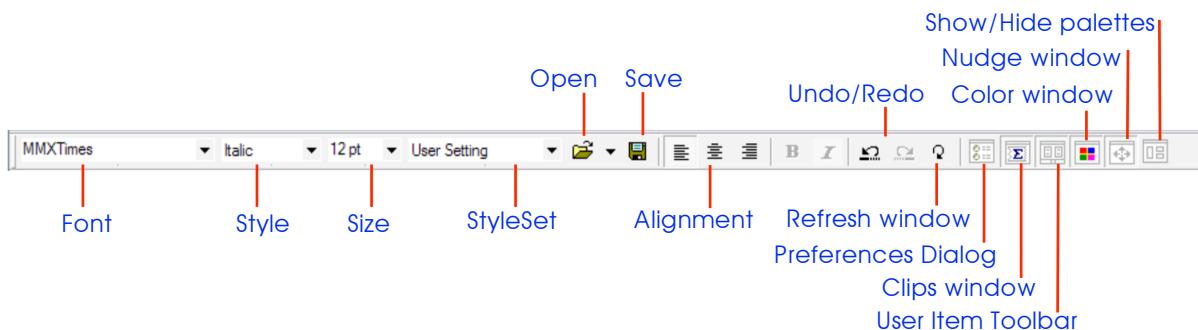
1.1 Editor window

The Editor window is where you enter and edit equations. To create an equation, select the Template palette 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% (except MathMagic Lite), with the default view rate set at 300%. The default view rate can be specified by the user in the 'Preferences' dialog. 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%. View rate can also be changed by Mouse-scroll wheel while holding **Alt** and **Window** keys.

- **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, quadruple-click or Shift-click. The selected area is displayed in the inverted color as specified on the computer by the current user. 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, dragged to the Clips window, 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

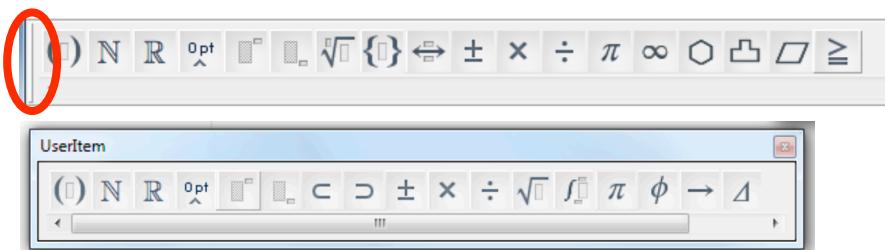
position, undo/redo status, and so on.

When the Main Toolbar is not displayed, you can toggle it by selecting the "**Main Toolbar**" menu command under the Window menu.

Main Toolbar is not detachable but only toggled on the fixed position, right under the menu bar.

- **Font** popup menu: Used to change the font for the selected part of the equation. You can either type a font name or select one from the list.
- **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. You can type a size value followed by a return key or select one from the predefined size list by clicking on the arrow button. Selected font size will be applied to the current selection. Decimal point value can be entered, too.
- **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 Preferences set.
- **Open / Save** buttons: Brings up File Open dialog / Saves the current top-most window to disk.
- **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: Ctrl-Z or Ctrl-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.
- **User Item Toolbar**: Used to show or hide the User Item Toolbar.
- **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.

1.3 User Item Toolbar



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

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.

User Item Toolbar can be detached from the main window and located at any position as a floating window as shown above. Detached floating window can also be attached back by dragging it to the original place.

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 **Alt** key.

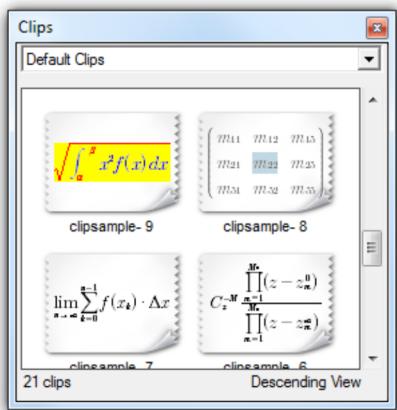
To remove items from the User Items Toolbar, click the item on the User Items Toolbar while holding down the **Alt** key.

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(UserItemList.mmd) in the "**MathMagic User Data v7**" folder so you need to be careful when you delete MathMagic User Data v7 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 equation clips. 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 drag it to the Clips

window or press **Ctrl + M**.

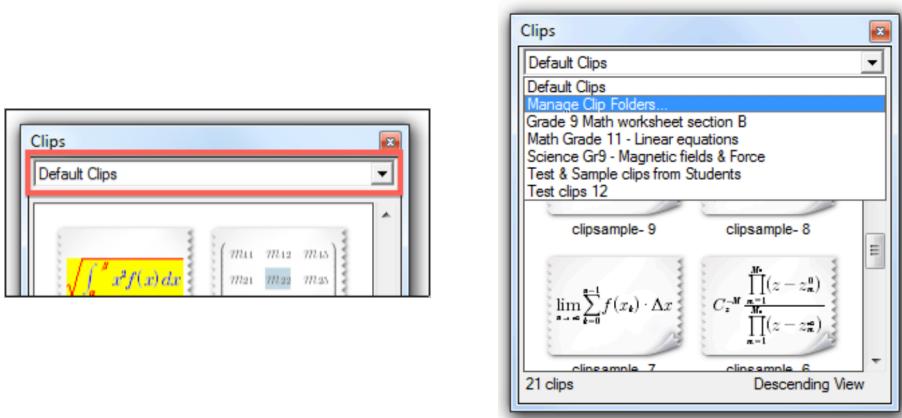
When an equation clip is created, a name is assigned automatically in the following format: [Editor window title + sequence number]. If you wish to change the name of the clip, right-button click on the equation using your mouse and select "Rename". Then, enter a new name.

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 **right-button click** on any clip to insert it, to sort them ascending or descending, or to delete it.

MathMagic Windows v7.6 or newer supports user-defined multiple Clips folders.

If you click on the "Default Clips" combo box menu as shown below, it lets you to choose another Clips folder or manage your Clips folder such as creating new Clips folder or renaming



[Image 3-4a] Clips window - switching multiple clips

The clip files are saved in the 'MathMagic User Data v7' folder, inside the "My Documents" folder of the current user.

<file:///C:/Users/.../My%20Documents/MathMagic%20Equation%20Editor/MathMagic%20Pro/MathMagic%20User%20Data%20v7/Clips>

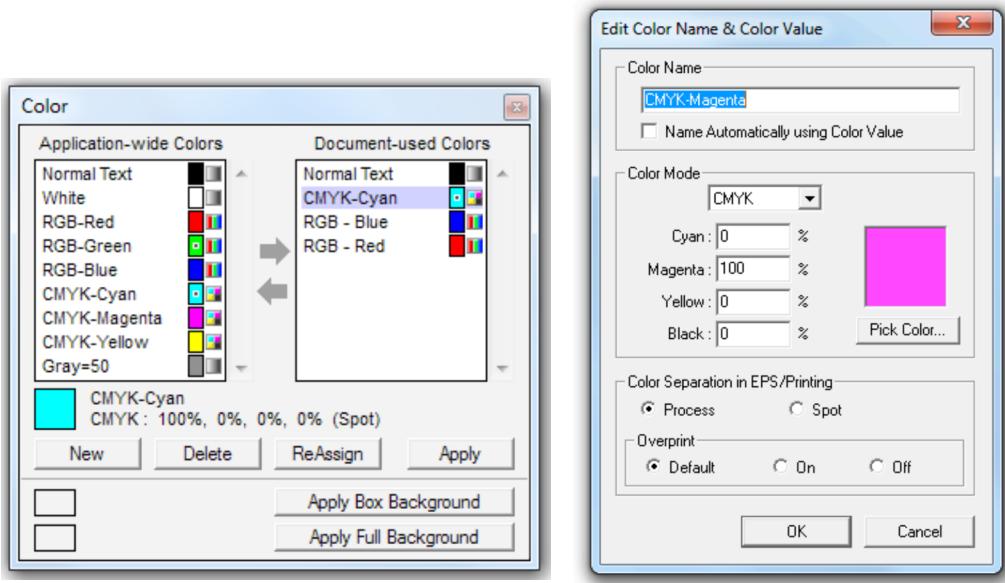
or

<file:///C:/Users/.../My%20Documents/MathMagic%20Equation%20Editor/MathMagic%20Personal/MathMagic%20User%20Data%20v7/Clips>

Each clip is saved in its own MathMagic Clip format with the file exteion .MMC. Clip files can be shared with others, either by copying the Clips folder itself into someone else's system, or by copying a clip into someone else's PC and then moving it to his/her *Clips* folder. The newly copied clip will show up 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 of the current editor window. 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 and Adding a new Color or ReAssigning Color Value

The Color floating window provides two color style lists, the **Application-wide Colors** and the **Document-used Colors**. Styles included in the Application-wide Colors list can be used across all Editor windows in the application. Also, by sharing the **Color** folder in the **MathMagic User Data v7** folder with others, you can share the same list of pre-defined colors. The Document-used Colors 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**, **CMYK**, and **Web Color**, 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** applied in MathMagic and it is set to be **transparent**. The background color can be set to **white** if necessary.

MathMagic Personal may have a limited interface for Color.

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 the Main 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

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. If you [right-button click](#), the palette window will be detached and become an independent floating window.

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

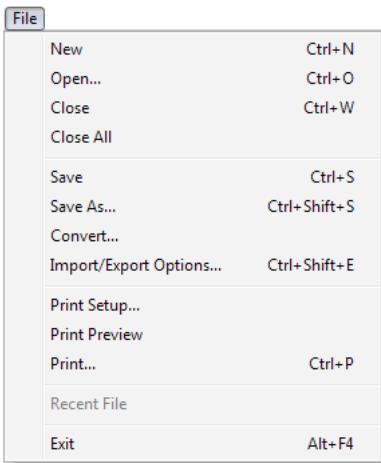
Press [Alt](#) key and [click](#) a certain item in the palette window to register it to the **User Items Toolbar**, keeping frequently used items together in one place. You can just drag an item from any Template/Symbol pop-up palette or floating window to the User Items Toolbar as well.

2. Menus

The menus in MathMagic follow the standard Windows interface. 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 File Menu



[Image 3-8] 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 by MathMagic in **.eps**, **.svg**, **.wmf**, **.jpg**, **.png**, **.pdf**, **.bmp** and **.gif** can be opened again in MathMagic to re-edit the equations.

MathMagic can also open **.eps**, **.pict** and **.gif** formats saved in **MathType**, as well as other equation-exclusive formats such as **MathML**, **LaTeX**, **Plain TeX**, **Wiki 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 MathMagic editor window to open it.

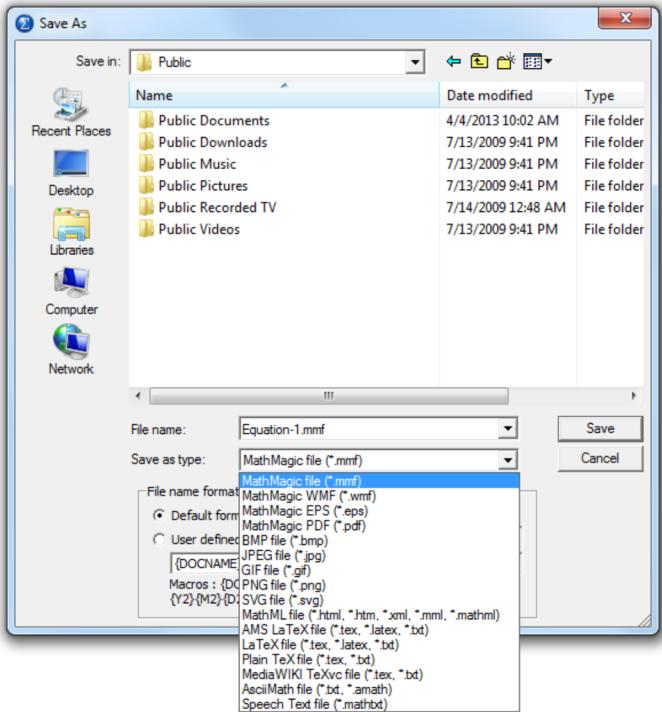
Save

Documents created in MathMagic are saved in the MathMagic native 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, iOS and Android OS. 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, supporting some backword compatibility as well if you have to open newer documents in an older version of MathMagic.

When a equation window is first saved, the following Save As dialog will be displayed to let you assign a file name.

Save As



[Image 3-9] Save / Save As dialog and supported file formats

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 EPS, color EPS, PDF, BMP, PNG, SVG, GIF and JPEG, and some standard math file formats such as MathML, LaTeX, Plain TeX, Wiki, ASCIIMath, and Speech Texts. More formats are added continuously so please check the latest version if your format is not listed here.

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

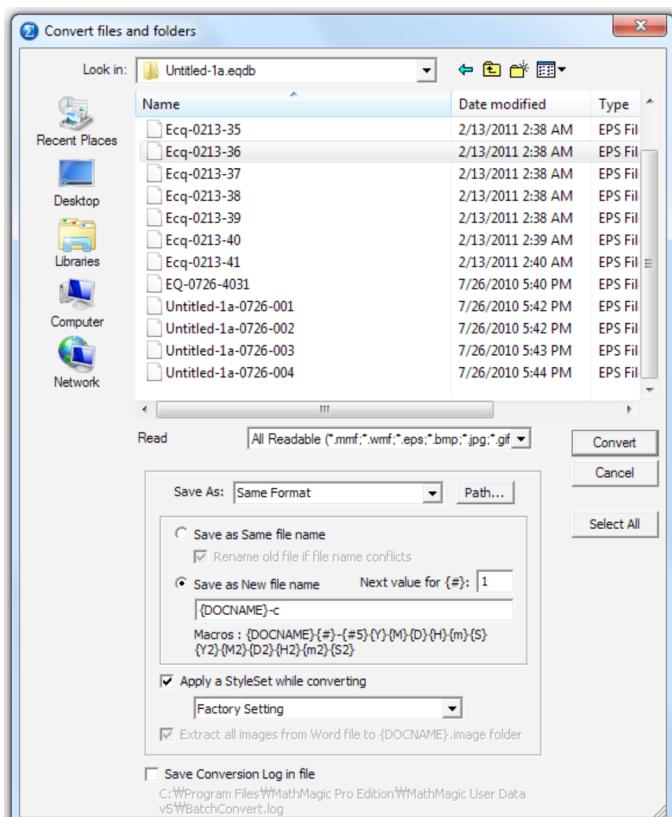
PDF format is supported in MathMagic v7.0 or newer. To save the current equation window in PDF and to support **Font embedding**, MathMagic should have TrueType format fonts in the following specific location for all used fonts in the equation:

Convert

With MathMagic, you can **Batch Convert** multiple equation files into a new format at once.

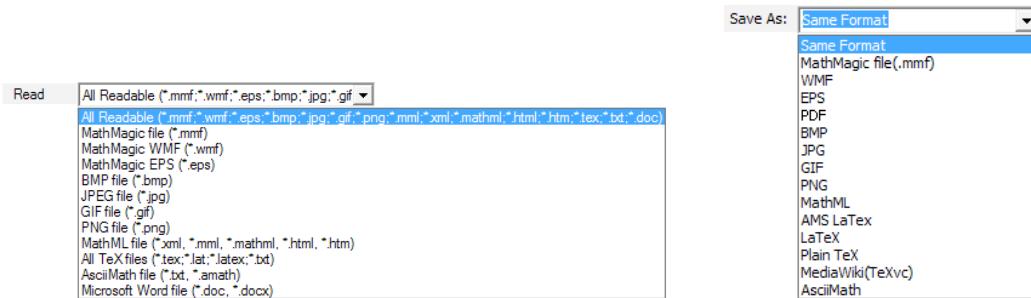
Note: The Batch conversion feature is not available in MathMagic Lite Edition, Demo mode or Evaluation copies of the software.

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 **Ctrl** 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 3-10] Convert dialog

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



[Image 3-11] 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 new MS Equation Editor included in Word 2007 or newer.

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 2007 or newer.

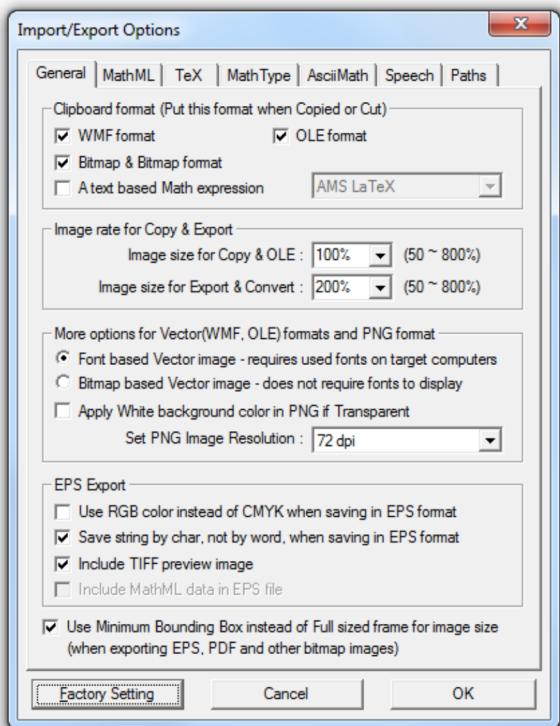
For information on using macros, please see "**VI. 2 Using Macros**".

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 3-12] 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 format for OLE objects, the resolution PNG, 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.

The default **StyleSet path** can also be changed here in the Paths tab. This user-defined StyleSet path is useful if a team wants to share the same StyleSet files.

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

2.2 Edit Menu



[Image 3-13] 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.



[Image 3-14] Undo / Redo button in the Main Toolbar

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 WMF format or OLE format by default. You can also select the Bitmap or Text based 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.

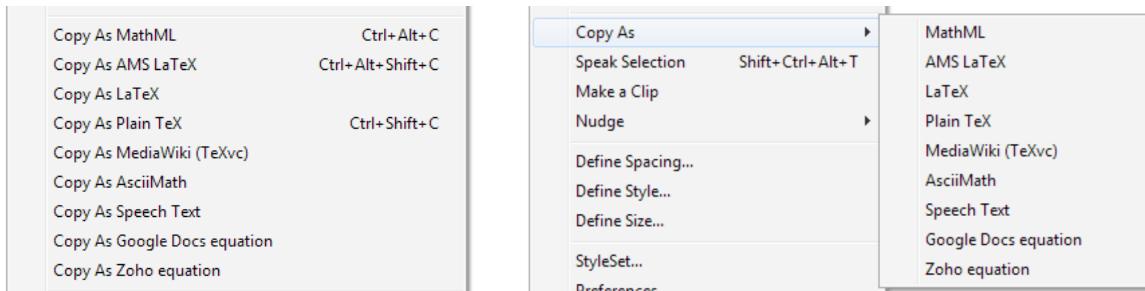
If the application supports **drag & drop**, you can also drag the equation directly out of the

MathMagic window. In this case, the equation will be copied only in the WMF format and OLE 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 and 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**" or "**Speak All**" 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.

"**See Results in Wolfram Alpha**" send the current equation to the WolframAlpha web site (<http://www.wolframalpha.com>) after converting the equation into WolframAlpha compatible expression. WolframAlpha web site will show you the result of the equation or the search. Wolfram|Alpha Pro user or paid subscriber of Wolfram|Alpha service may get some more results.

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

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

Select "**Greek Input follows**", or press **Ctrl-G**, and press an English alphabet key to insert the Greek letter that corresponds to it. For example, pressing Ctrl-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.

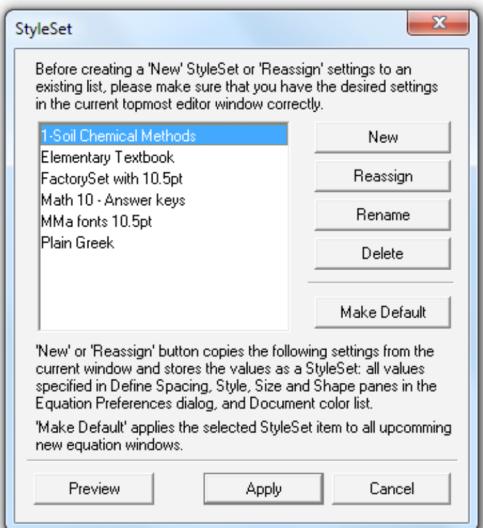
With the "**Register Shortcuts**" command, you can define unique shortcuts for items in the Clips window or on the User Items Toolbar. For more information, please see '**VI. Advanced Features**'.

"**Use Magic Application key**" toggles the **Magic Application 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 *Application* key or *Menu* key, usually located between the space bar and right side Ctrl key. Some keyboards may have this Menu key on the upper right corner or on the right side of Function key row. Pressing the *Application/Menu* key and the key displayed in the yellow **tooltip** opens up the corresponding palette. Then, release the *Application* 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 [MathMagic User Data v7\StyleSets](#) folder. When working with others on the same project, these files can be shared to

establish identical working environments.

User can also specify a **network based path** for the StyleSet from the File -> Import/Export Options dialog: **Paths** tab. This feature is useful if a group of people need to share the same StyleSet files for a project to have the same StyleSets across computers.

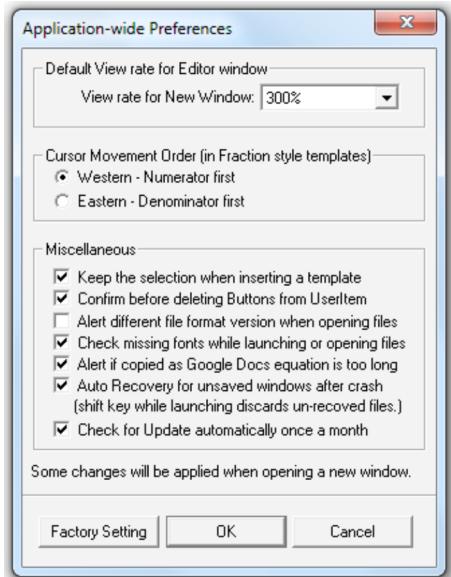


[Image 3-16] StyleSet management dialog

- **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.

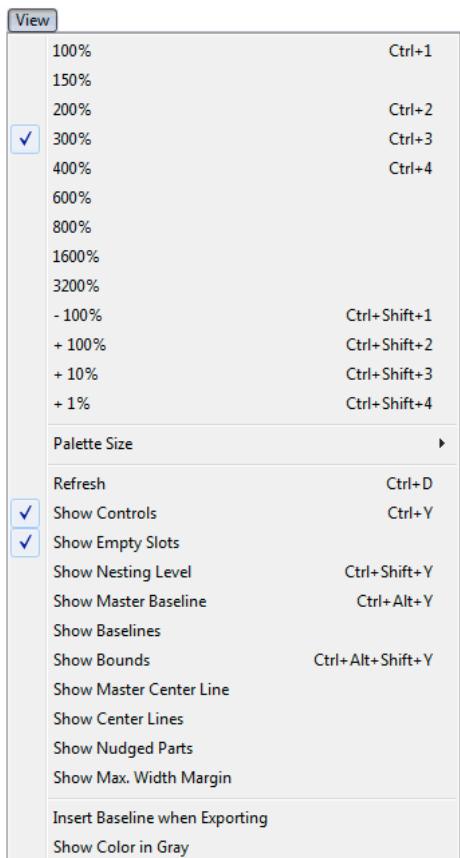
"**Preferences...**" dialog has options and settings used globally across the documents in the application. The default view rate of new editor windows, Cursor moving order, Auto-recovery, and other Misc options can be set here.

Settings will be application-wide and applied to all MathMagic editor windows.



[Image 3-17] Application-wide Preferences dialog

2.3 View Menu



[Image 3-18] 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 newer monitor with higher screen resolution or smaller dot pitch, 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.

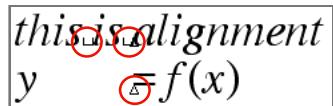
Shift-PageUp or *Shift-PageDown* changes the view rate by the increment of 100%.

View rate can also be changed by **Mouse-scroll wheel while holding Alt-Windows keys**(by 100%) or **Alt-Windows-shift** keys(by 10%).

'**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 following button on the Main Toolbar.



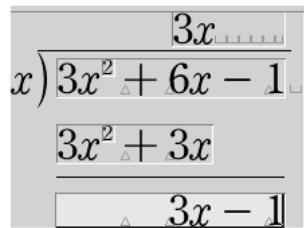
'**Show Controls**' displays space and alignment base control characters.



"**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.



"**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.

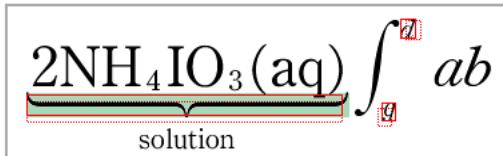


Commands such as '**Show Baselines**', '**Show Bounds**', and '**Show Center Lines**' can be used when you need to edit the equation precisely while verifying its size, gap, position, or other attributes.

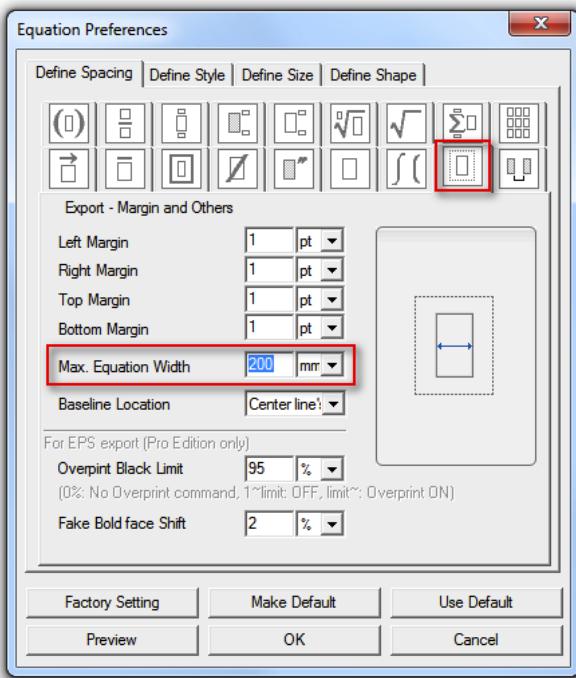
$$C_z = \prod_{m=1}^{M_o} (z - z_m^0)$$

$$C_z = \prod_{m=1}^{M_o} (z - z_m^\infty)$$

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.



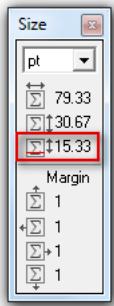
'Show Max. Width Margin' is only available when the "Max. Width Margin" value is specified in Preferences -> Spacing as shown below. If the width of the page or the paragraph of the document that is being edited is limited, specifying this value displays red margins in the Editor window. Also, if the 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.



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

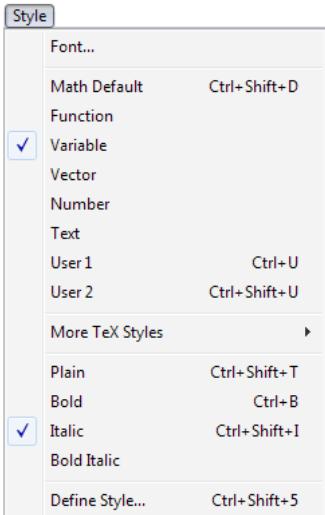
the Size floating window as shown below.



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

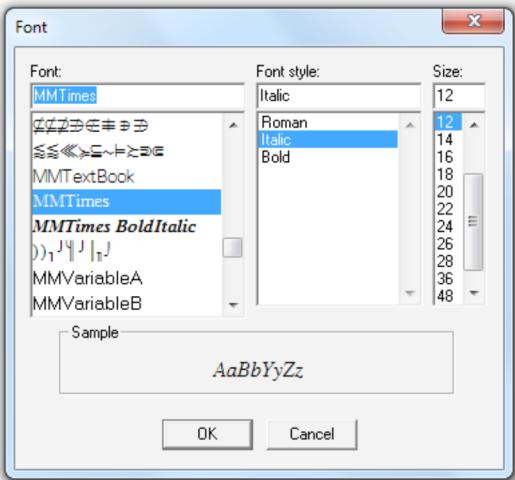
Please **note** that MathMagic Personal Edition does not store the baseline info in EPS format.

2.4 Style Menu



[Image 3-20] Style 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.



[Image 3-21] Font menu

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***, although they may work on the equation editor window and other bitmap based formats such as PNG or BMP.

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 Equation Preferences -> Style tab.

Function

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

Here are some of the predefined Function names currently recognized by MathMagic.

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**

Automatic recognition of Function names can be turned off by unchecking Style -> Auto Apply Style -> Function.

Variable

'Variable' applies the variable style to the selected area. You can change the default variable style under the 'Style' tab in Equation Preferences. Automatic setting of Variable style can be turned off by unchecking Style -> Auto Apply Style -> Variable.

Number

'Number' applies the number style to the selected area. You can change the default number style under the 'Style' tab in Equation Preferences. Automatic setting of Number style can be turned off by unchecking Style -> Auto Apply Style -> Number.

Text

'Text' applies the body text style to the selected area. You can change the default text style under the 'Style' tab in Equation 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 Equation 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 *Alt* 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 *Alt-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.

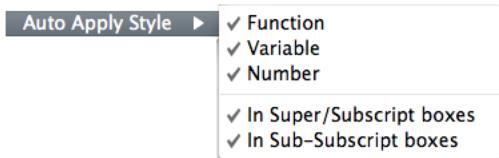


MathMagic only supports **bold** and *italic* font faces as other faces are not commonly used in equations. However, the outline-style **Blackboard** font used in equations and other fonts for LaTeX are provided in MathMagic. Please see "More TeX Style" above.

Define Styles...

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

Auto Apply Styles...

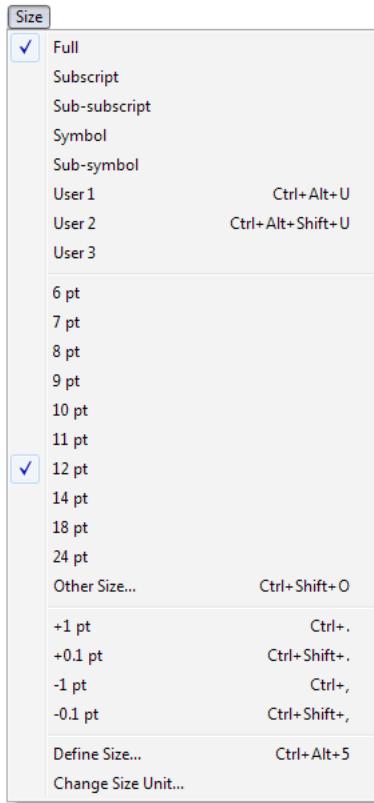


User can turn **on** or **off** the automatic style setting feature of MathMagic engine. Once turned on, MathMagic engine automatically parses the context and applies its default style as you type in. All options are turned ON by default.

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.

2.5 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 Equation 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' size applies the default size to the selected area. The default Full size can be specified under the Size tab in Equation 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

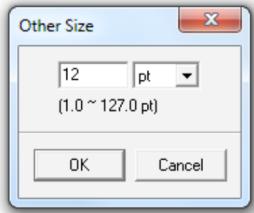
'Symbol' and 'Sub-Symbol' applies the symbol or the sub-symbol size to the selected area.

User 1, 2, 3

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

Other...

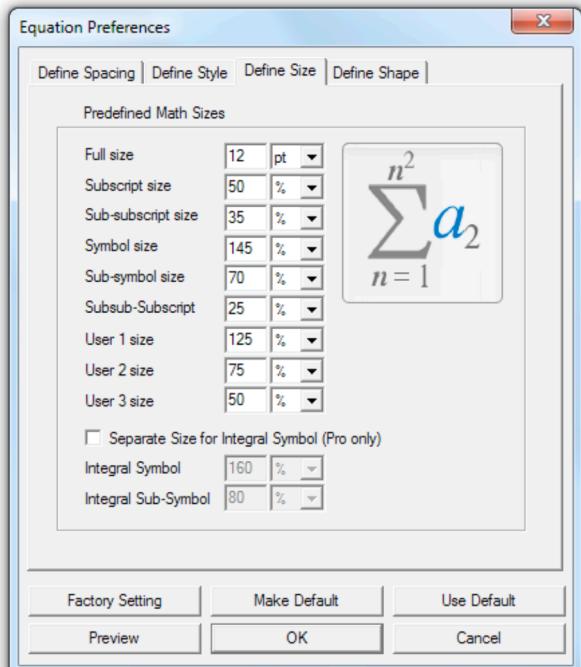
'Other' allows you to apply an exact size. The size may range from 1.000 to 127.999 and be adjusted in the increment of 0.001 point. You can also select the size unit from pt, q, mm, inch and pica.



+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, inch or pica, 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.

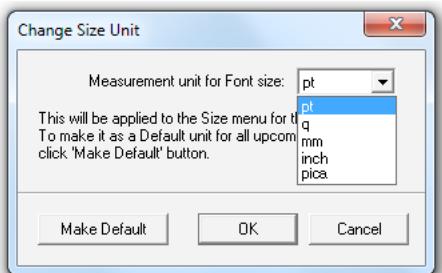


[Image 3-23] Equation Preferences -> Define Size tab

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

Change Size Unit...

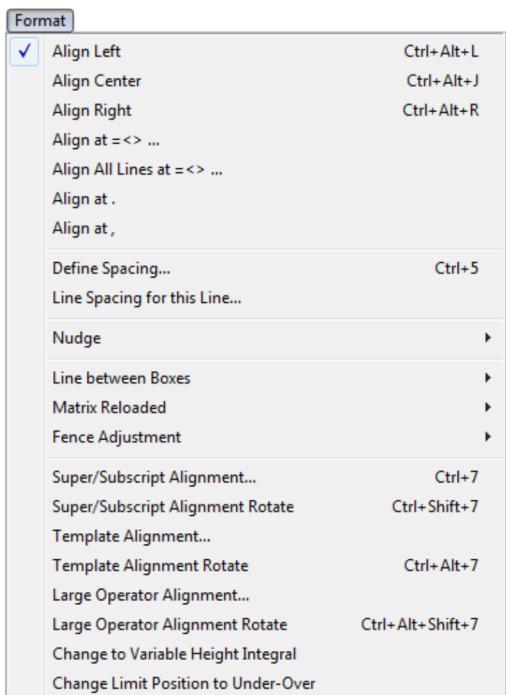
'Change Size Unit' allows you to change the standard size unit. You can choose among **pt, q, inch, mm and pica**. Changing the unit here changes the font size displayed in the Size menu as well as main units displayed in other places.



[Image 3-24] Change Size Unit dialog

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

2.6 Format Menu



[Image 3-25] Format menu

With the 'Format' menu, you can specify the alignments, row spacing, and positioning of the equation elements, and other adjustments. Each menu item becomes available depending on the **current Cursor location**, 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.

$$\begin{array}{l} y = 2x - 1 \\ y + 3 = 3x + 1 \\ \text{Find } x, y. \end{array}$$

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)

$$\begin{array}{l} y = 2x - 1 \\ y + 3 = 3x + 1 \\ \text{Find } x, y. \end{array}$$

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.

12.33	12,33
1,234.5	1234,5
0.213	0,213

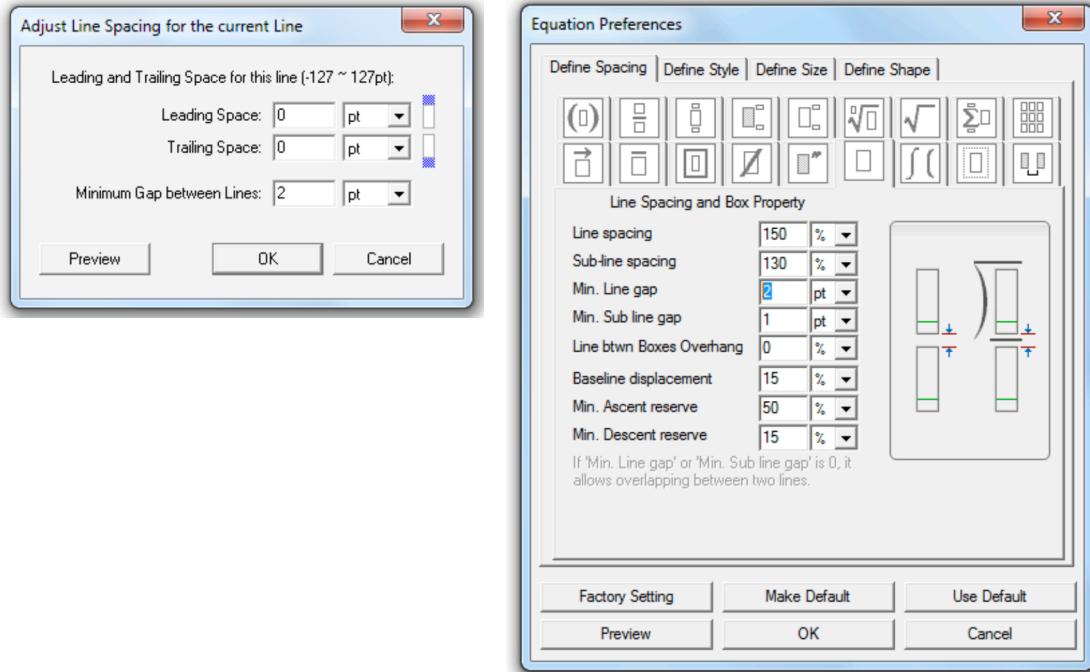
Define Spacing...

'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.

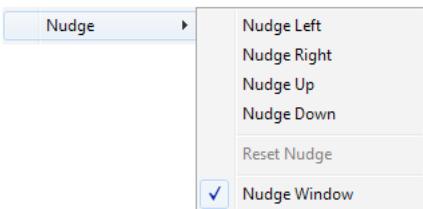
The leading space and the trailing space can range from -127 pt to 127 pt. If you set the line gap to 0 and specify a small value for the leading space, you can make two rows overlap partially or fully.



[Image 3-26] 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.



[Image 3-27] Nudge sub-menu

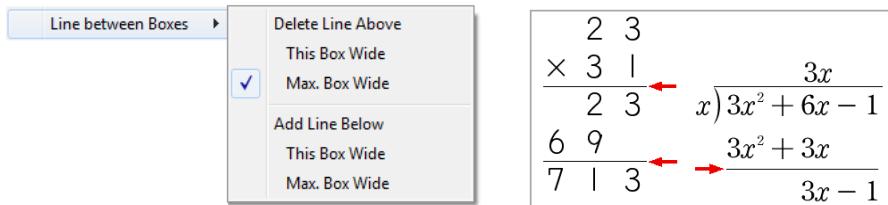
All functions available in the sub-menu can be accessed from the **Nudge floating window**, too.

Or, press the arrow keys while holding down the **Alt** key and **Ctrl** 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 on screen at 3,200% view rate moves the selection at 1/32 pt precision, 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.

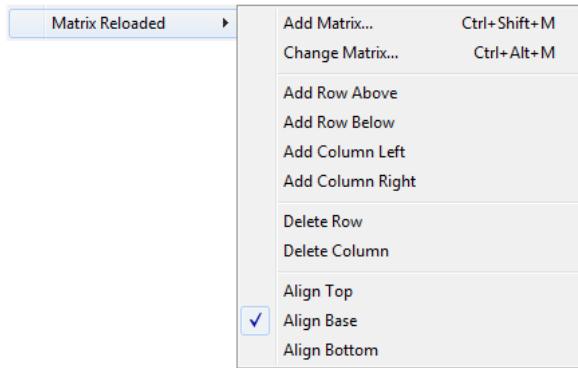


[Image 3-28] Line between Boxes sub-menu & Horizontal line examples

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

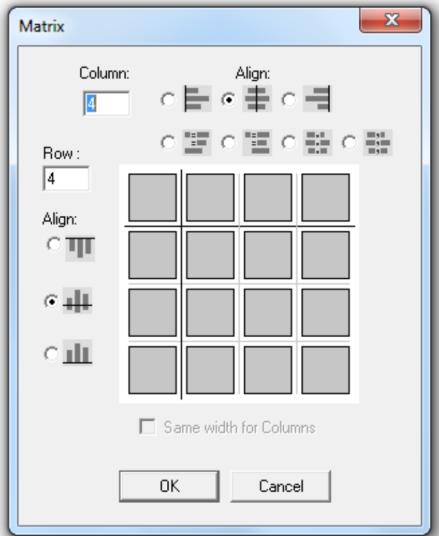
This menu is used to add or change matrices. Most of the sub-menu items are available when the cursor is inside, or directly at the right behind of, the matrix.



[Image 3-29] 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 3-30] 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.

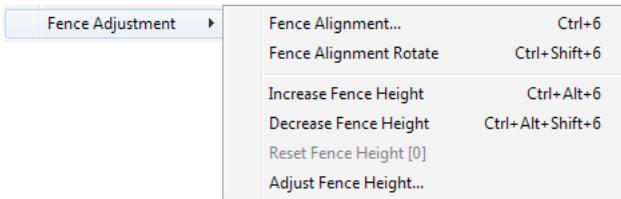
Align Top, Align Base, Align Bottom

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.

$$\begin{array}{c} \overline{a} \frac{1}{2} z \\ \overline{b} \frac{b-1}{2} z-1 \end{array} \quad \begin{array}{c} \overline{a} \frac{1}{2} z \\ \overline{b} \frac{b-1}{2} z-1 \end{array} \quad \begin{array}{c} \overline{a} \frac{1}{2} z \\ \overline{b} \frac{b-1}{2} z-1 \end{array}$$

Fence Adjustment

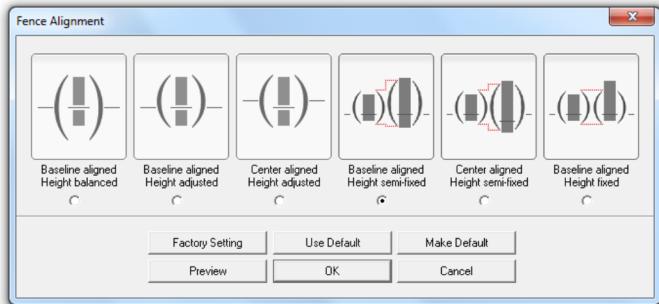
'Fence Adjustment', composed of the following sub-menu items, provides features necessary in aligning fences or in changing the height of fences. This menu item is **only available when the cursor is inside, or directly at the end of, a fence template.**



[Image 3-31] Fence Adjustment sub-menu

Fence Alignment

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



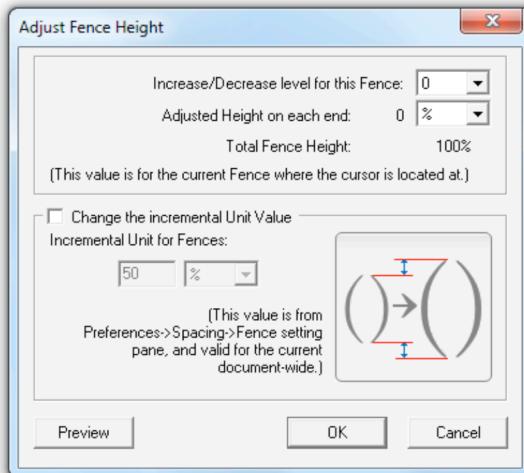
[Image 3-32] Fence Alignment options

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 and see which option looks better, 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.

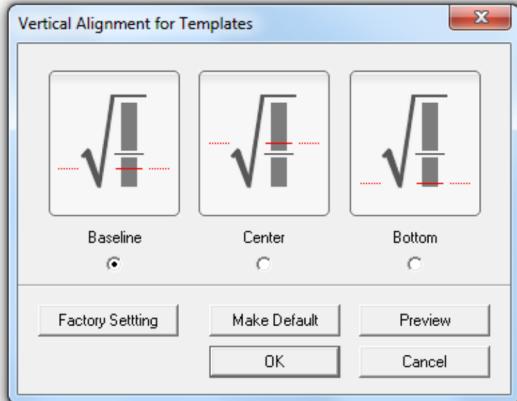


[Image 3-33] Adjust Fence Height dialog

Template Alignment..., Template Alignment Rotate

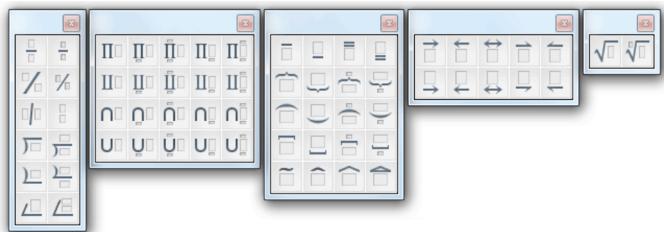
'Template Alignment...' selects the alignment mode of the items inside and outside a related template.

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 3-34] 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.

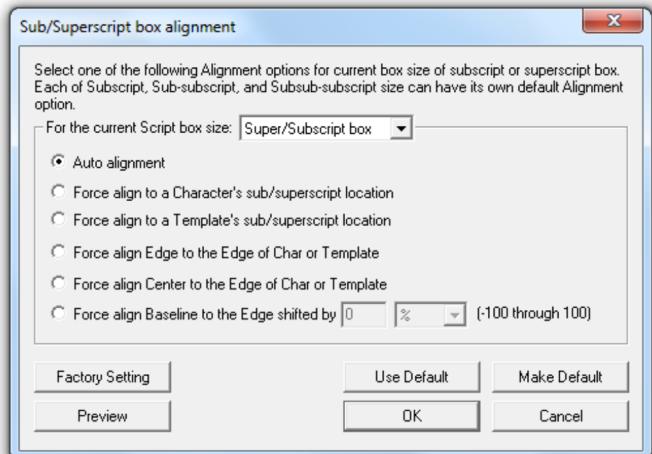


[Image 3-35] Templates supported for the Vertical Alignment options

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

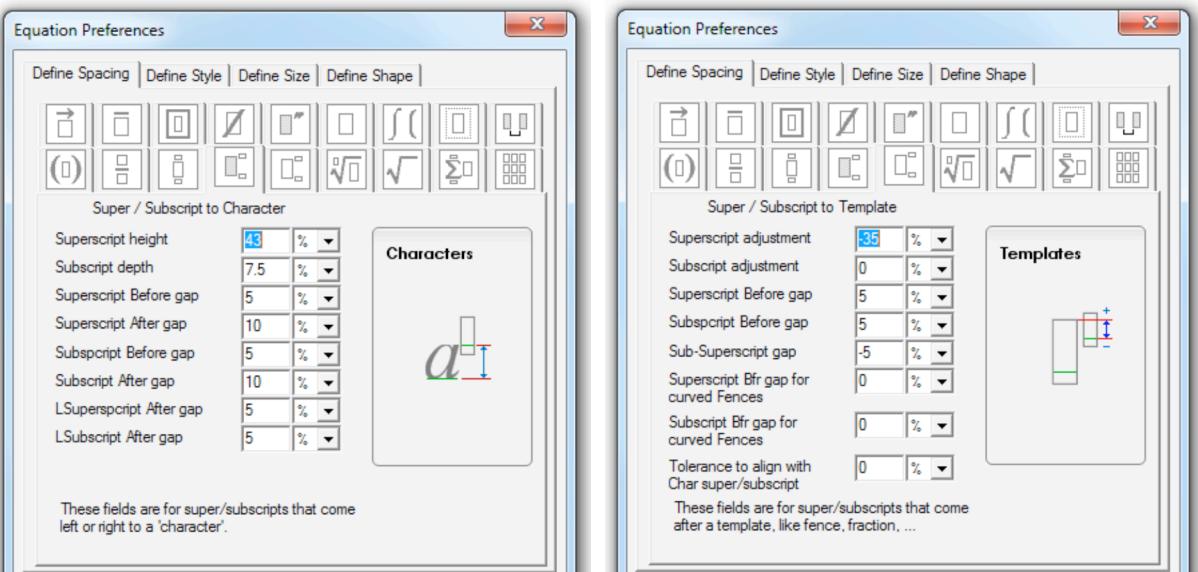
With 'Super/Subscript Alignment...', you can specify how the superscript or subscript is to be aligned in relation to the "host" character. You can use this menu item to manually adjust the superscript or subscript position that is automatically specified by MathMagic.

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



[Image 3-36] Sub/Superscript box alignment options

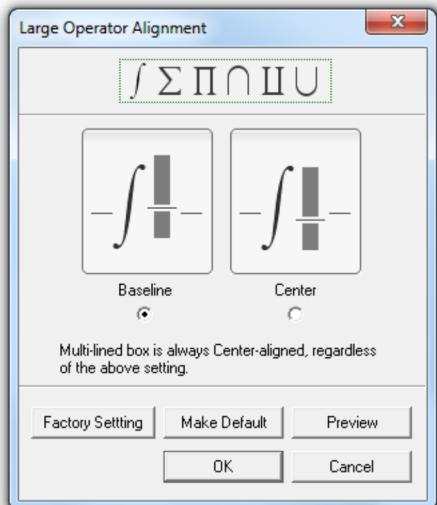
For a more precise adjustment, or to specify default values, you can pre-define them in Preferences -> Spacing: Scripts to Character, Scripts to Template, depending on whether the superscript or subscript belongs to a character or a template, as shown below, depending on whether the superscript or subscript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



[Image 3-37] Script alignment settings for Character and Template

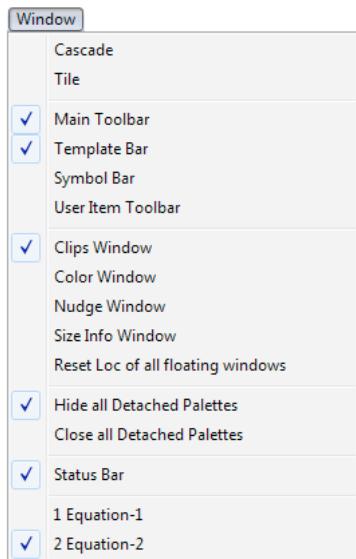
Large Operator Alignment..., Large Operator Alignment Rotate

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 3-38] Large Operator Alignment options

2.7 Window Menu



[Image 3-39] Window menu

The Window menu allows you to toggle various floating windows, select a MathMagic 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.

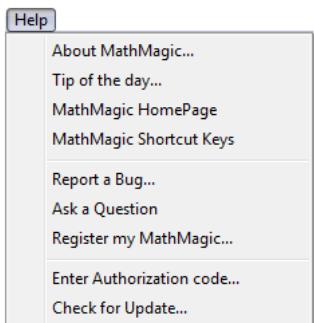
In using MathMagic, if the floating windows become scattered or not very visible, you can select "**Reset Loc of all floating windows**" to re-position all open floating windows to their recommended positions.

"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.

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 shrinked in the task bar.

2.8 Help Menu



[Image 3-40] Help menu

Under Help menu, you can access the MathMagic website, ask questions, or register your product. The Help menu items may vary depending on the MathMagic product and its version.

Tip of the Day

This will display the following dialog window, showing you some tips and useful information in using MathMagic. This dialog window is automatically displayed when you launch MathMagic by default, allowing user to turn it off by unchecking "Show Tips on Startup" check box from this dialog.

"Next Tip" button will let you navigate thru all the tips included.

The included Tips file is located in MathMagic User Data v7\StyleSets folder. So, if this file is missing or moved, MathMagic may not display tips.

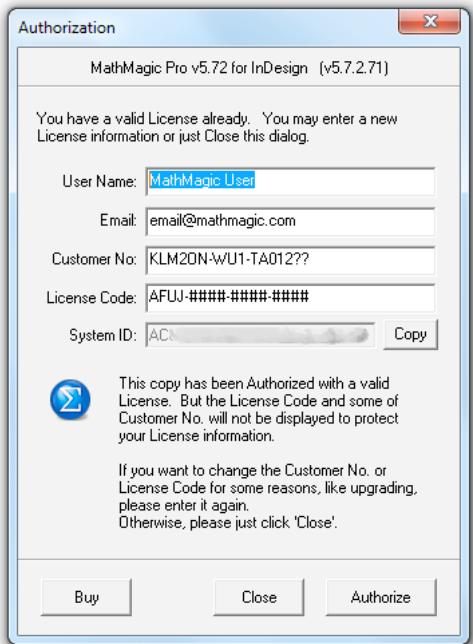


[Image 3-41] Tip of the day window

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 3-42] Authorization dialog with a License code entered

Check for Update checks if there is a newer version available. This command works only when the internet connection is available.

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 each palette according to their association and similarity. 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 Application shortcut key** combinations, which allow you to enter symbols and templates using only the keyboard.

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.

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.



[Image 3-43] Template Palette Toolbar (Anchored under Main toolbar)



[Image 3-44] Detached Template Palette Toolbar

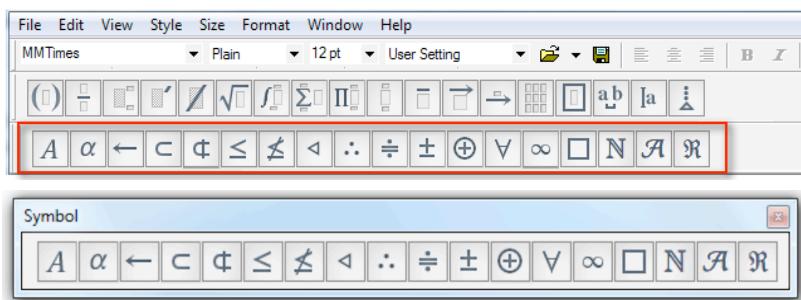
With "Use Magic Application key" enabled under the Edit menu, you can hold down the *Application key* or *Menu key* to display the shortcut information in the yellow tooltip on each template icon.



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 3-45] Symbol Palette Toolbar (Anchored, Detached)

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.



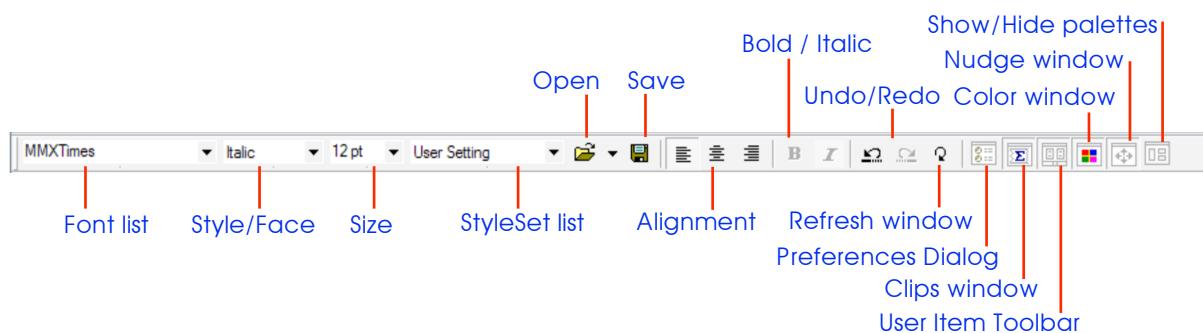
For more details, please see '*IV. 2. Symbol Palette*'.

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 3-46] Main Toolbar items

Fonts, Style, Size

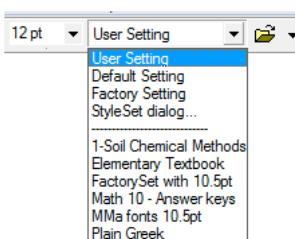
These sections display the font, style, and size information of the mathematical expression that is directly in front of the current cursor location. If there is a selection in the Editor window and the selection contains more than one font or style, the corresponding fields become blank.

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.

Size combo box allows you to enter 1.0 pt ~ 127.999 pt values, in 0.001 pt accuracy.

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 3-47] StyleSet combo box in the Main Toolbar

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.

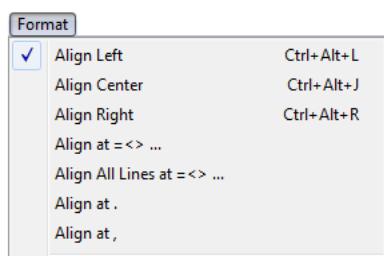
For instructions on how to create StyleSets, see "2.3 Edit -> StyleSet".

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.



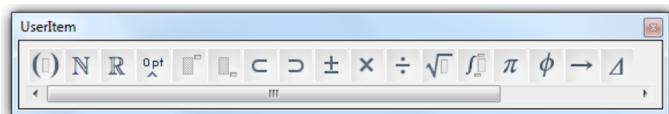
[Image 3-48] More Alignment options from Format menu

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 detached and placed anywhere on the screen as a floating window.

You can double-click on the UserItem title bar or drag it out to detach and make it a floating window.

Double-click on the title bar to anchor it back, or **drag the title bar** to the top or bottom of the MathMagic main window frame to anchor it as you wish.



[Image 3-49] Detached floating UserItem Toolbar

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

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 ***Alt*** key. Or, just drag an item from any Template or Symbol palette to the User Item toolbar.

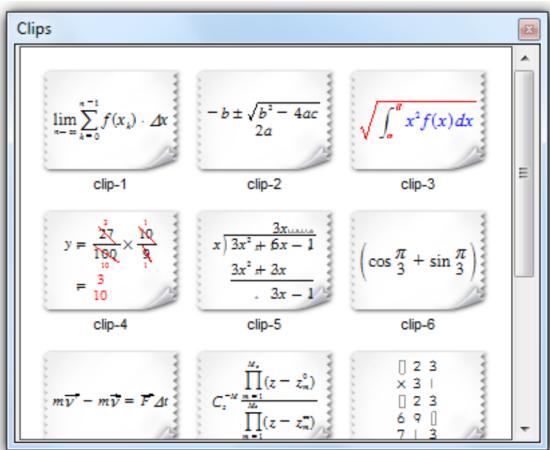
Deleting Items from the User Items Toolbar

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

To add a clip to the Clips window, select the applicable section on the equation and press ***Ctrl-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, drag the clip to the desired position.

Right-button click on a clip to Rename, Delete, or Re-order it.

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 floating window

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

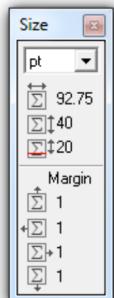


You can nudge the selection from the Nudge sub-menu under the Format menu, or, alternatively, you can use the **arrow keys** while holding down the **Ctrl-Alt** key.

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 combo box** at the top of the Size floating window allows you to instantly verify the size information in different units: pt, q, inch, mm, pica.

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 documents.

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

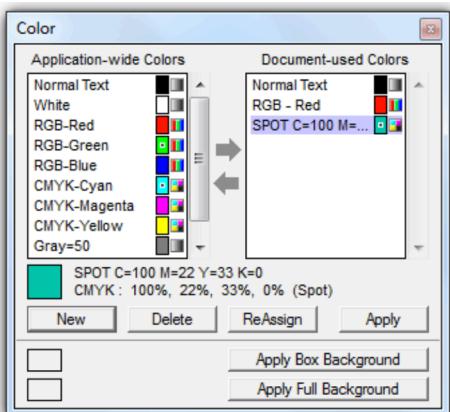
6. Color Window

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.



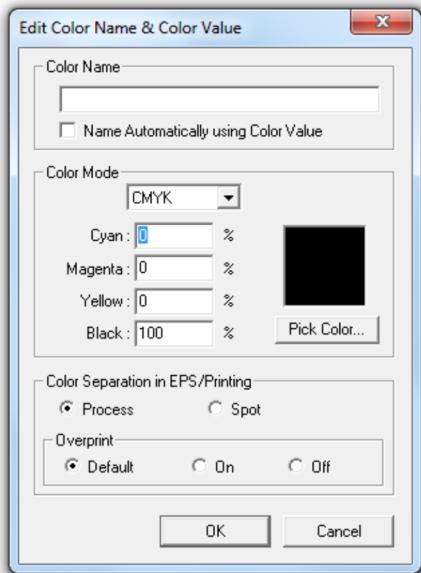
[Image 3-53] Color floating window

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.

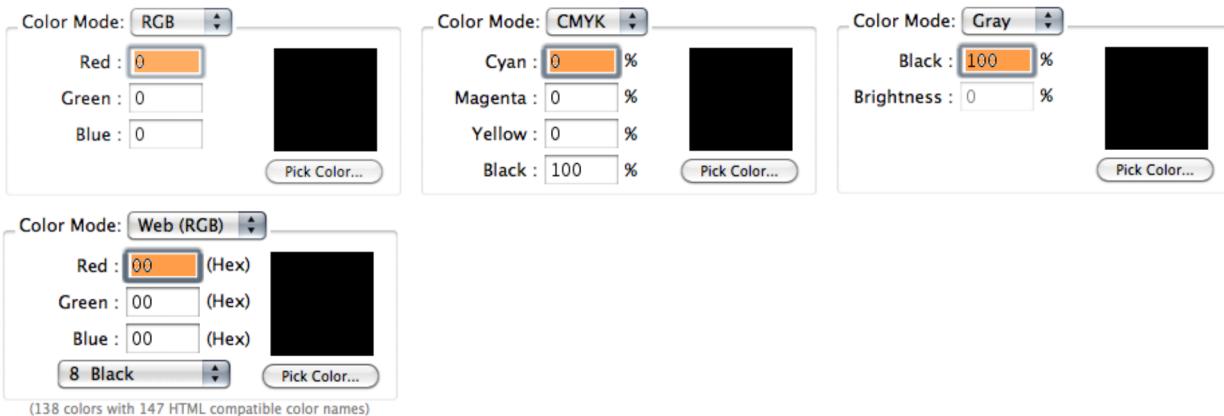
You can create and assign a new color by clicking "**New**". This brings up the following dialog box:



[Image 3-54] New Color window

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

Under "Color Mode", you can select RGB, CMYK, Grayscale or Web color(RGB). Web color is basically a RGB based color information but supports predefined Web color names and handles the color values in Hexa-decimal format. 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

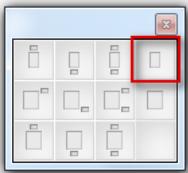
currently being used in some places in the document, it will not be deleted. In this case, you can apply a different color to the places to which the color in question has been applied, and then delete the color. Clicking "Apply" applies the selected color to the selection in the Editor window. If there 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 from the following template palette.



$y = 3x^2 + 6x - 1$ (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:

[\(\MathMagic Application folder\)\MathMagic User Data v7\Color\UserDefaultColor](file:///C:/Program%20Files/MathMagic/MathMagic%20User%20Data%20v7/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 Application keys**
- **Single-step shortcuts for major templates**
- **Double-step shortcuts for entering templates, symbols and Greek characters**
- **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 Windows shortcut interface, so that the users can use MathMagic quickly. MathMagic Mac OS version and MathMagic Windows version are
The following are frequently used major shortcut keys. For more information on menu item shortcuts, please see "**III. 2. Menu**".

File menu

Ctrl-N:	New editor window
Ctrl-O:	Open a file
Ctrl-W:	Close window(Close all windows, if closed with Option key)
Ctrl-S:	Save
Ctrl-shift-S:	Save As
Ctrl-shift-K:	Convert files (batch conversion dialog)
Ctrl-shift-E:	Import/Export Options dialog

Edit menu

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

View menu

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

Style menu

Ctrl-shift-D:	Revert to Math Default style for selection
Ctrl-U:	Apply User-1 style for selection
Ctrl-shift-U:	Apply User-2 style for selection
Ctrl-shift-T:	Apply Plain face for selection
Ctrl-B:	Apply Bold face for selection
Ctrl-shift-I:	Apply Italic face for selection

Format menu

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

7.2 Magic Application Shortcuts (Quick Shortcuts)

Magic Application or **Magic Control** shortcuts are a shortcut method **exclusive** to MathMagic which is activated upon pressing **Menu** key or **Application** key (usually located on the right side of the space bar). 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 Application key**" is enabled under the Edit menu.

As shown below, pressing the **Menu** 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 **Menu** key pressed (Magic Application key interface)

Press the key that is assigned to the palette, while holding down the *Menu* key, to bring up the

corresponding pulldown palette. If you happen to have the wrong palette, you can press other shortcut keys with the *Menu* key pressed down to view other pulldown palettes.

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



At this point, you can press the corresponding key, without holding down the *Menu* 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 Application 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 **Control** key. For instance, the following pre-defined single-step shortcuts are available for entering templates:

Ctrl-L:	Subscript
Ctrl-H:	Superscript
Ctrl-J:	Sub-Superscript
Ctrl-F:	Fraction
Ctrl-R:	Square Root
Ctrl-shift-R:	Root Of
Ctrl-I :	Integral
Ctrl-' :	Prime
Ctrl-shift-' :	Double Prime
Ctrl-9, Ctrl-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 (Ctrl-T)**", "**Symbol Input follows (Ctrl-K)**", and "**Greek Input follows (Ctrl-G)**" under the Edit menu.

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

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

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

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

In the case of Greek characters, pressing **Ctrl-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 I. Shortcuts*".

7.5 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.

<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.
Alt-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, MathMagic selects the component. Then, Nudge and Color can be applied to the selection.
right arrow	Move cursor to the right

left arrow	At the end of a template box, move to the beginning of the next box Move cursor to the left
down arrow	At the beginning of a box, move to the end of previous box
up arrow	Move to the nearest point of the next line Move to the nearest point of the previous line
Ctrl-right arrow	Move to the end of the line
Ctrl-left arrow	Move to the beginning of the line
Ctrl-down arrow	Move to the end of the document
Ctrl-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-ctrl-right arrow	Move to the end of the line, and select in-between contents
shift-ctrl-left arrow	Move to the beginning of the line, and select in-between contents
shift-ctrl-down arrow	Move to the end of the document, and select in-between contents
shift-ctrl-up arrow	Move to the beginning of the document, and select in-between contents
Ctrl-Alt-right arrow	Nudge(move) the current selection to the right 1-point of the current view
Ctrl-Alt-left arrow	Nudge(move) the current selection to the left 1-point of the current view
Ctrl-Alt-down arrow	Nudge(move) the current selection to the down 1-point of the current view
Ctrl-Alt-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
Ctrl-home	Move cursor to the beginning of the document
Ctrl-end	Move cursor to the end of the document
tab	Move cursor to the end of current box
shift-tab	At the end of a box, move to the beginning of the next box Move cursor to the beginning of current box
return, enter	At the beginning of a box, move to the end of the previous box Add a new line as a same level of current line
shift-return	In the middle of a box, breaks the line and move the right part to the next line Convert the TeX expression in the current line into equation, if any TeX expression found.
backspace (backward)	Delete the left character of the cursor
delete (forward delete)	If it is a template, select the box first and then delete it by another delete key Delete the right-side character of the cursor If it is a template box, just select the box
Menu key (Application key)	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.)

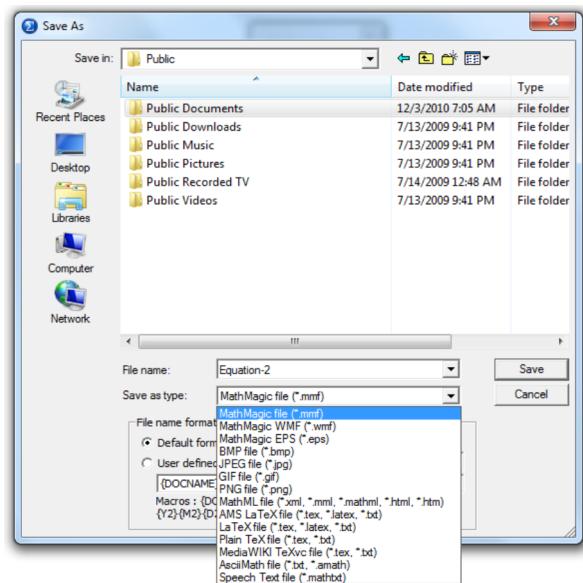
8.1 Save As

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: **SVG, BMP, EPS, PDF, PNG, JPEG, GIF, WMF**
- Mathematical Expressions Format: **LaTeX, MathML, Plain TeX, Wiki TeX, AsciiMath, AsciiMathML**
- Other Modified Formats: **Text-To-Speech (Math-To-Speech), Google Docs, Zoho, Wolfram Alpha, URL TeX**

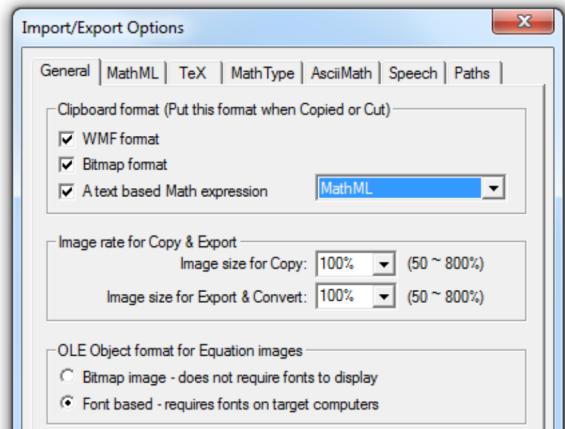
Note: Some Export options are not available in MathMagic Personal Edition.

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 -> Save As and select the format you want.



Most of the formats above also embed 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 WMF and OLE 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 Open / Import

When a file is saved in MathMagic, the MathMagic native equation data is also embedded 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: **EPS, PDF, PNG, JPEG, GIF, MathML, LaTeX, OLE, 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.

This means, MathMagic only supports the basic printing features that come with the OS. If more printing options are required, it is 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 save 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 a 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 because InDesign's built-in 2-byte engine has some other default alignment options. If you frequently use in-line equations and require automatic baseline alignment, the English version of InDesign is recommended, or **use the English Composer settings for the text box**.

10.1 Installation & Settings

Please refer to the Installation Guide or **ReadMe First** file provided in the MathMagic Pro installer(or disk image) and install the necessary components, including the correct version of MathMagic Plug-in under \InDesign CSx\Plug-ins folder.

Although it may vary depending on the product type and version, the following components must be installed in the following locations if you run the installer with the default setting:

- **MathMagic Pro Edition** folder -> **C:\Program Files** folder (on x86 system)

- > C:\Program Files (x86)\ folder (on 64-bit Windows)
- a correct MathMagic Plug-in -> InDesign CSx\Plug-ins folder
(The MathMagic Plug-in should be manually copied and installed to the above path)
- MathMagic Fonts -> C:\Windows\Fonts folder
- Some other components and DLLs -> C:\Windows\system32 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, manually copy the correct version of InDesign plug-in (for example, InDesign CS6)

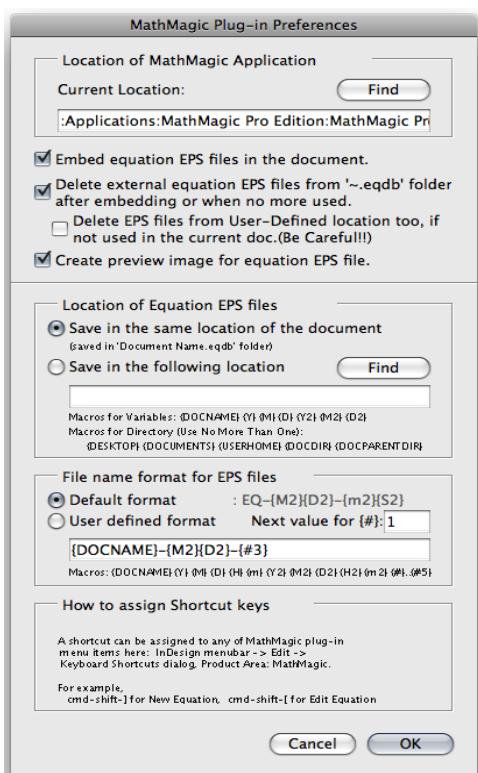
- C:\Program Files (x86)\MathMagic Pro Edition\Plug-ins folder\MathMagic CS6 folder

and paste it into the following InDesign's Plug-ins folder.

\InDesign CS6\Plug-ins folder

NOTE: Please make sure that you copy the whole MathMagic CS6 folder itself, not the files from inside MathMagic CS6 folder. This applies to InDesign CS5 plug-in and CS5.5 plug-in as well.

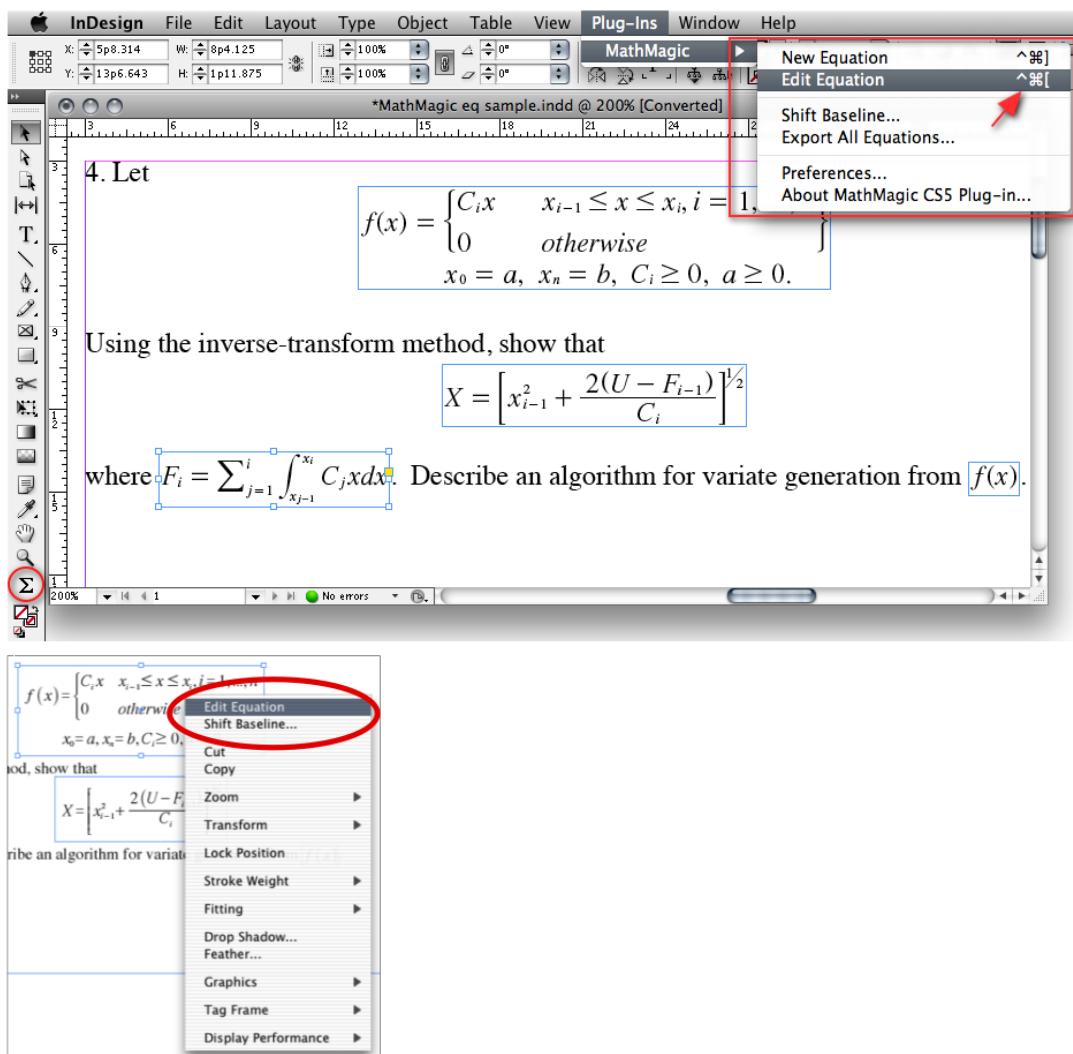
Then, run InDesign application. If MathMagic Plug-in is installed and loaded correctly, 'Plug-ins' menu will be inserted in the InDesign menubar. Then, select Plug-ins -> MathMagic -> Preferences to display the Preferences dialog. Specify the path for MathMagic Pro application and other settings from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



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 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. Switch to InDesign document and select '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.
- Set the current cursor where you'd like insert an equation.
- 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** (ctrl-S) the equation or **Close** (ctrl-W) the window. The equation will be automatically saved and displayed in the InDesign document.

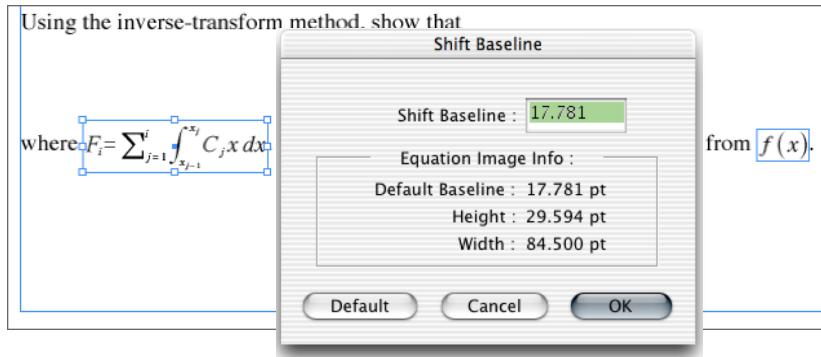
If the cursor is inside a text box, the equation appears as in-line graphic (ILG) at the current cursor location. Otherwise, the equation is inserted as EPS graphic in a picture box near the current cursor location or where you click.

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 -> Dispaly 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 from the Plug-ins -> MathMagic menu or double-click the equation box. This launches MathMagic Pro(if not readily running) and opens the equation in the equation editor window. If the cursor has not changed to an **arrow**, press *Ctrl* and *Alt* keys together while double-clicking. If the cursor has been changed into an arrow, you can right-click the equation to bring up the 'Edit Equation' 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 by right-clicking and select '**Shift Baseline**'.
 - Select the equation box and select '**Shift Baseline**' under the Plug-ins -> MathMagic sub menu.



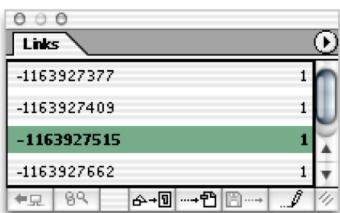
10.4 Managing Equations

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 from the Preferences dialog, all EPS files temporarily saved in the said folder are **deleted when the document is closed**.

Thereafter, all equations are automatically managed by Adobe InDesign whether embeded 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.

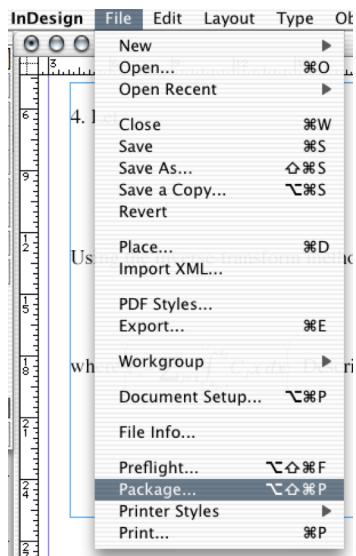
If the link to the EPS equation inserted in the InDesign document is broken, go to **InDesign menubar -> Windows -> Link**, launch the 'Link' floating window, and **Update the link**.



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.

Sending a **package file** may caused some unexpected result because equation links are all reset. Please pay more attention before you print if you have received equations in a package.



It is possible to share InDesign documents containing MathMagic equations with other Windows users. However, when sending the InDesign document to other users, 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.

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.

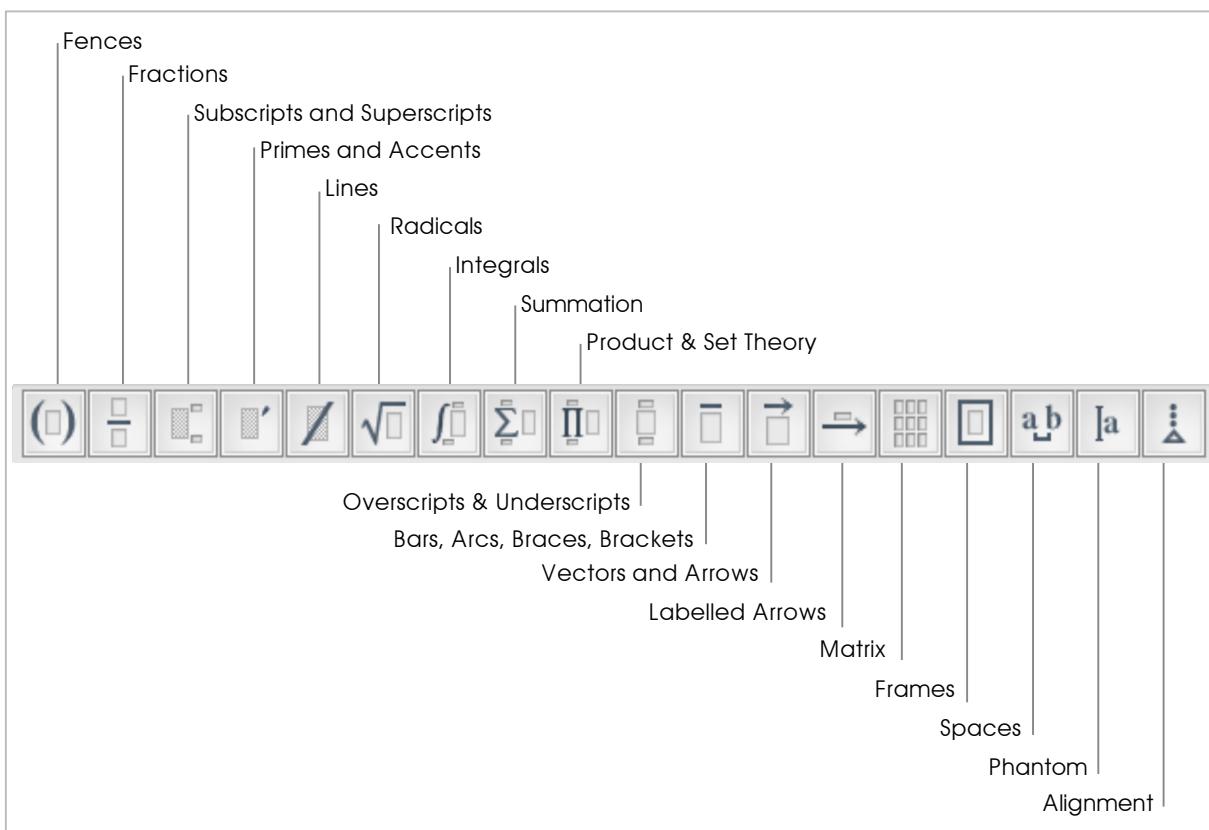


To create a mathematical expression, select the desired template from the palette and enter the appropriate numbers or characters. The following is an example of the summation template.



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.

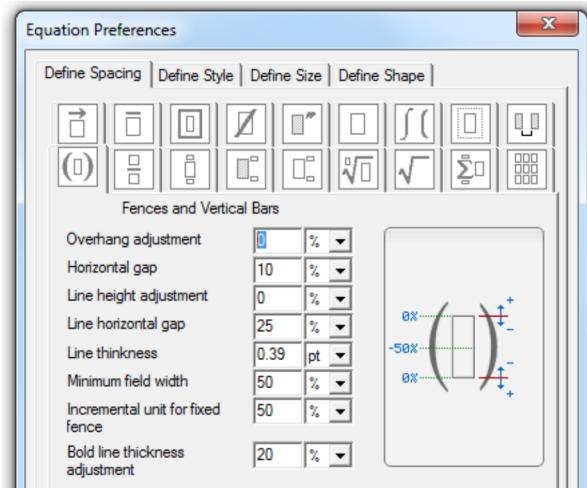
Although you can type in (), { } or [] from the keyboard, this way inserts fences as regular characters rather than as templates. In this case, the automatic resizing feature of the fence is unavailable. The difference between the fences template and fences as regular characters entered with the keyboard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

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

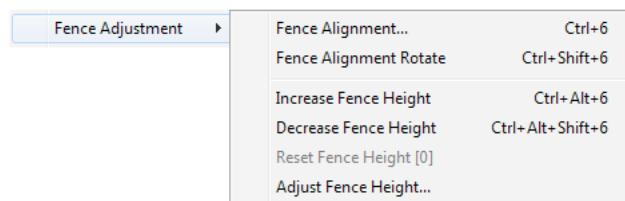
$\left[\frac{3}{x^2-1} \right]$: The bracket is a Fence template.

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

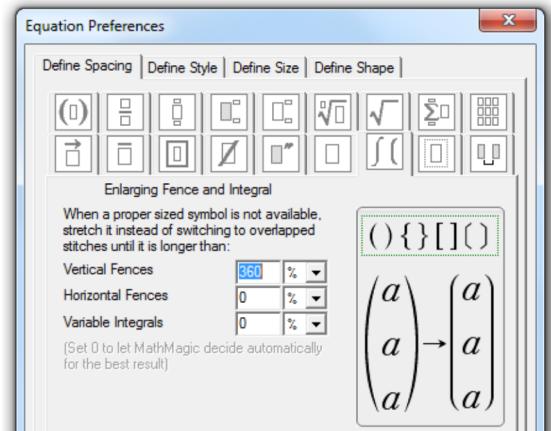
The height and spacing of fences can be specified in Preferences -> Spacing -> Fences & Vertical Bars.



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.

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

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.



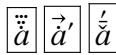
1.4 Accents, Primes, Hats, Bars

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 (Backspace) 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 and Vertical Divisions



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.

Frequently used Cube root and Quad root are also predefined.

Reversed Squareroot and Indexed root are also supported in MathMagic v7.3 or newer, for the right-to-left writing countries in the Middle-East.

Vertical

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

$$\begin{array}{r} 3x \\ x \sqrt{3x^2 + 6x - 1} \\ \hline 3x^2 + 3x \\ \hline 3x - 1 \end{array}$$

$$\begin{array}{r} 12 \\ \sqrt{34} \end{array} \quad \begin{array}{r} 12 \\ 34 \end{array}$$

$$\frac{4ac - b^2}{\sqrt{}}$$

1.7 Integrals



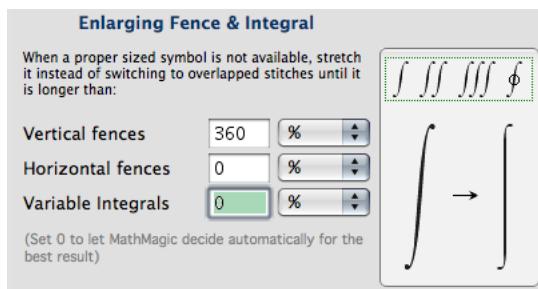
This palette contains forty different types of integral templates including single, double and triple integrals. To create **Variable height integrals**, click an integral template **while holding down Shift key**. This will automatically adjust the height of the integral symbol depending on the content inside it. (See figures below)

$$\int_0^{\infty} \Delta x \int_0^n \Delta x$$

$$\int_{cz}^{ax} by$$

$$\int_{dx}^{bx} cx$$

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:

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

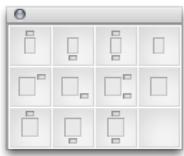
The last item is not a template but a sum **symbol**. Because this symbol is used rather frequently, it is provided on this palette for the purpose of convenience.



1.9 Products and Set-Theory

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

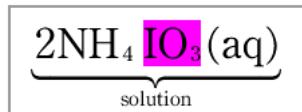
1.10 Underscripts and Overscripts



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.



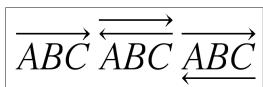
The two angle bracket templates to the right of the bottom row do not stretch out even when the length of the input slots are increased.

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**.

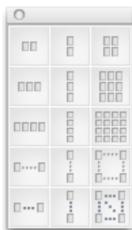
1.13 Labeled Arrows



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

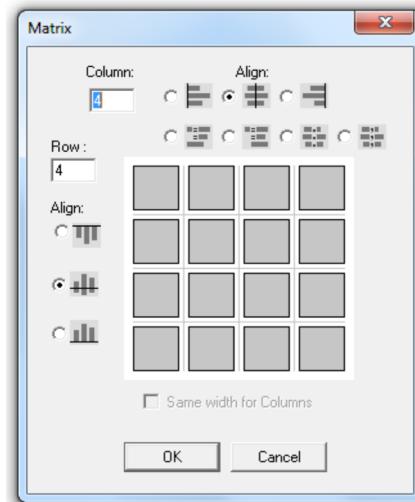
$$f_n(x) \xrightarrow{\text{uniformly}} f(x), f: X \xrightarrow{\text{onto}} Y$$

1.14 Matrix



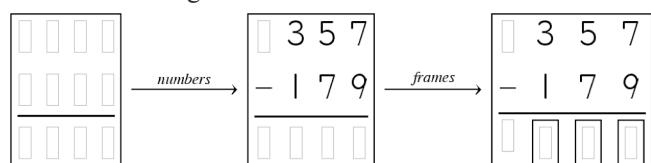
You can use the Matrix templates to create matrix equations, period tables, vector arithmetic operations and tables.

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 **insert 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. You can also **apply a color** to the line. Please refer to **VI. 8. Custom Matrix** section for more details.

This feature is very useful when creating a table or mathematical expressions like the following:



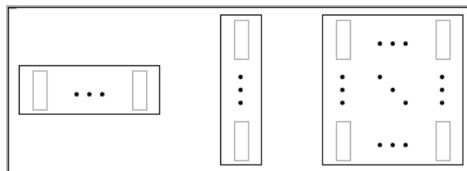
$$\begin{array}{r}
 3 \ 2 \\
 \times \ 1 \ 2 \\
 \hline
 6 \ 4 \\
 3 \ 2 \\
 \hline
 3 \ 8 \ 4
 \end{array}$$

(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.

Templates on the bottom row adds dotted connection in-between.

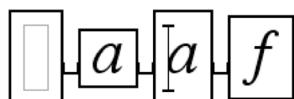


1.15 Frames

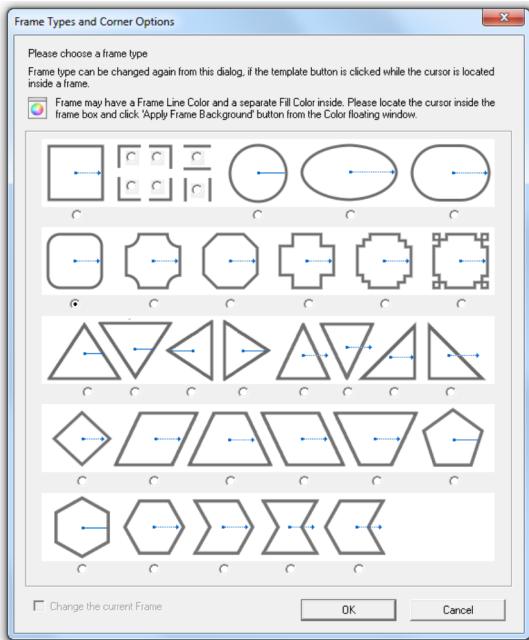


You can use these templates to create various kinds of frames including squares. The frame thickness, the gap between the frame and the empty slot, etc. can be specified in Preferences -> Spacing.

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.



If the last item is selected (), the following dialog will show up to let you select many more Frame types and Corner shapes.



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.

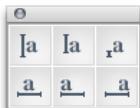
The spaces on the first row are of the **Em** variety, which use the width of the upper case 'M' of the base font of the equation. From 1/16 to full-size, a total of 7 Em based spaces are available.

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 Controls (ctrl-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:

$$\begin{aligned}y_1 &= ax^2 + bx \triangle - 3 \\y_2 &= a_2x^2 \quad \triangle - 2\end{aligned}$$

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.

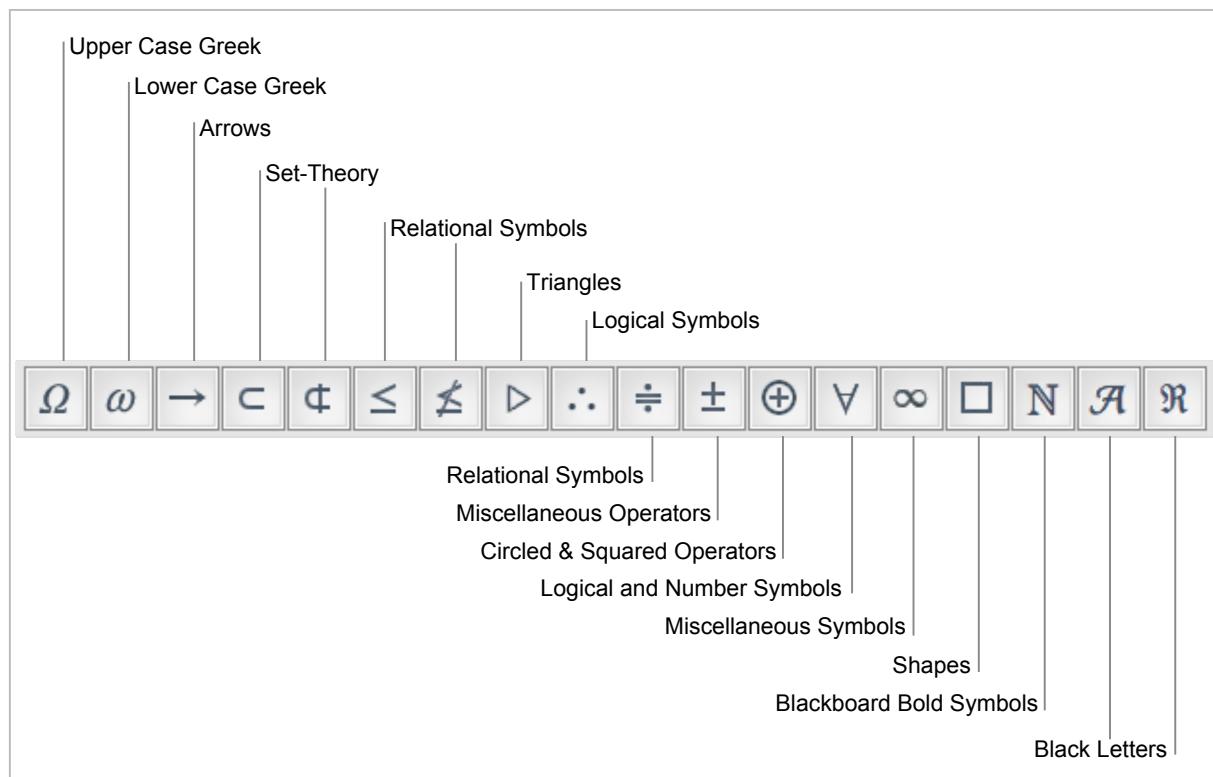
Its shortcut key is available as **ctrl-alt-Tab** key.

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.

ΑΒΧΔΕΦΓΛΟΠΘΩΨαβχδγλπθσ MMGreek

ΑΒΧΔΕΦΓΛΟΠΘΩΨαβχδγλπθσ MMCenturyOldGreek

ΑΒΧΓΔΕΣΛΟΠΡΨαβγδεενξοπθσ MMA GreekS Italic

You can also press **Ctrl-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.

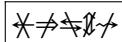
2.2 Arrows



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 MMArrow 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



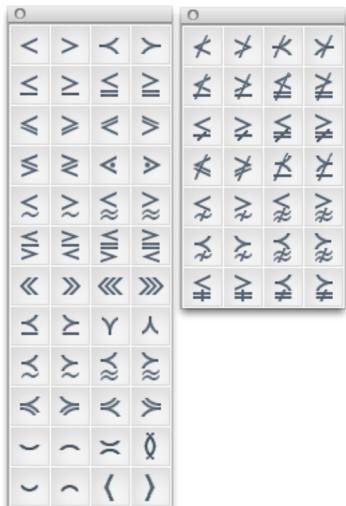
This palette contains Set-Theory symbols.

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.

$\in \notin \exists \forall \subseteq \supseteq$

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.

$\neq \neq \neq \neq \neq$

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.

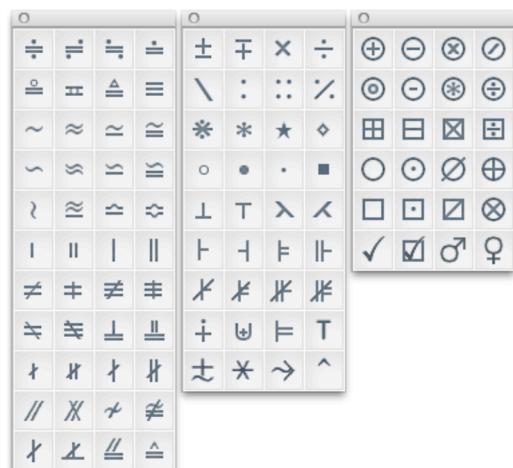
2.6 Logical Symbols and Ellipses Symbols



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

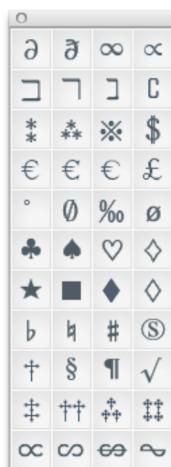


These palettes contain various **binary operators**, **unary operators**, operators enclosed in circles and boxes, some negated operators, and other various related symbols.

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.

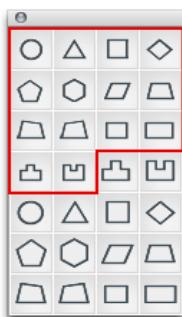
2.8 Miscellaneous Symbols



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 **Ctrl-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 **Ctrl-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 **Ctrl-F** for the shortcut key. Now your equation should look like this:

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

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**.

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

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 **ctrl-H** for its shortcut key.

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

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

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 **ctrl-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, **Ctrl-T**, and then **S** for the 2 step shortcut. Ctrl-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 **ctrl-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 **ctrl-H**.

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

$$f(x) = \sum_{n=1}^{\infty} c_n e^{inx}$$

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 following equation using Matrix template.

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

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 **ctrl-L**. Fill in the subscript slot with
 1. Press tab key to move the cursor to the next slot.
5. Type **, y** beside **y**. 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:

$$W(y_1, y_2) = \boxed{\boxed{}}$$

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:

$$W(y_1, y_2) = \boxed{\boxed{\boxed{}} \quad \boxed{\boxed{}} \\ \boxed{\boxed{}} \quad \boxed{\boxed{}}}$$

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.

$$W(y_1, y_2) = \boxed{\begin{array}{|c c|} \hline y_1 & y_1 \\ y_1 & y_1 \\ \hline \end{array}}$$

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:

$$W(y_1, y_2) = \boxed{\begin{array}{|c c|} \hline y_1 & y_2 \\ y_1 & y_2 \\ \hline \end{array}}$$

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:

$$W(y_1, y_2) = \boxed{\begin{array}{|c c|} \hline y_1 & y_2 \\ y'_1 & y'_2 \\ \hline \end{array}}$$

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 **ctrl-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:

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

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:

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

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 **ctrl-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.

4. 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:

$$y_0 = 2y \pm \frac{1}{\sqrt{\frac{\sin x}{8}}} + c^2$$

5. 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 **ctrl-X** (Cut command) and **ctrl-V** (Paste command).

Now the equation will look like this:

$$y_0 = 2y \pm \frac{\sqrt{\frac{\sin x}{8}}}{1} + c^2$$

6. 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 **Ctrl-R** shortcut key, or  button in the usual way.
7. 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  palette.

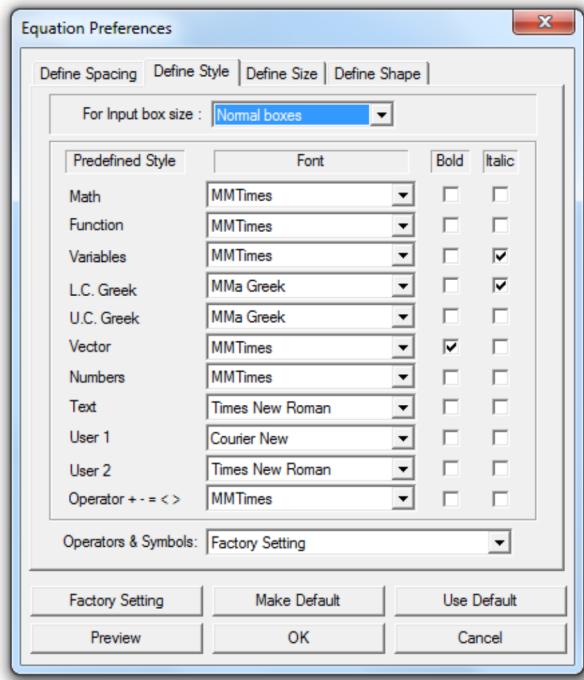
And the rest `s=`, `(x+y)` and `-log2` can be just typed like regular characters.

The equation will look like this:

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

- 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.



- 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.
- 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.
- 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.

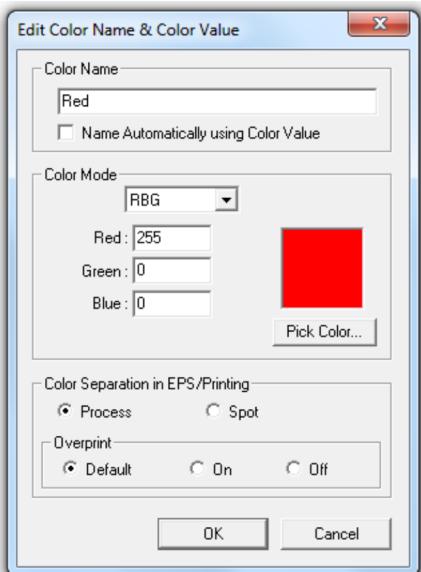
MathMagic allows you to specify colors freely just like other word processors - applying while typing-in equations, and applying colors later after you type in all equations in black.

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-used Color list or Application-wide 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 Pickter by clicking "Pick Color" button. Once a color is set, please "OK" button and close the dialog.



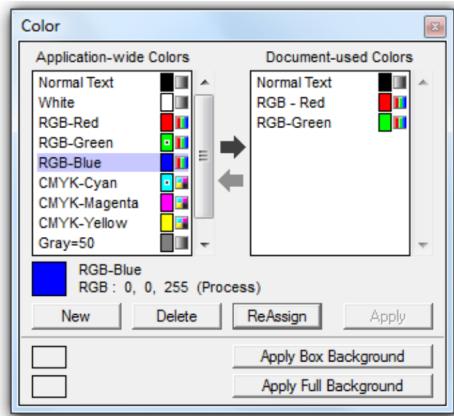
3. Select 'y', and then apply **Blue** color, by choosing from Color menu or double-clicking on the **Blue** color
4. Select 'x²', and then apply **Red** color, by choosing from Color menu or double-clicking on the **Red** color

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 **RGB-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-Red** color.

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

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

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

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, **Alt-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, Alt-click on the Root line or Integral symbol will select the specific part only.

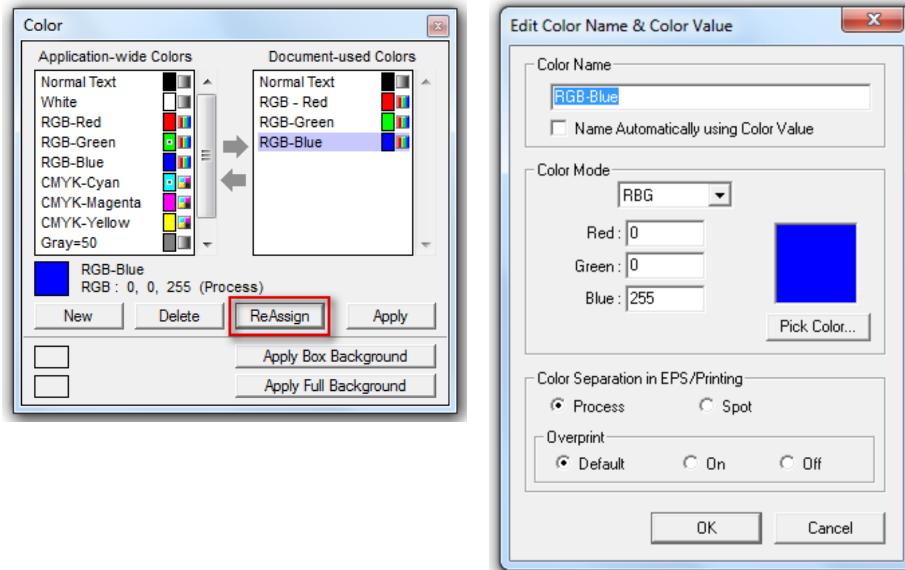
Let's change a color quick.

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

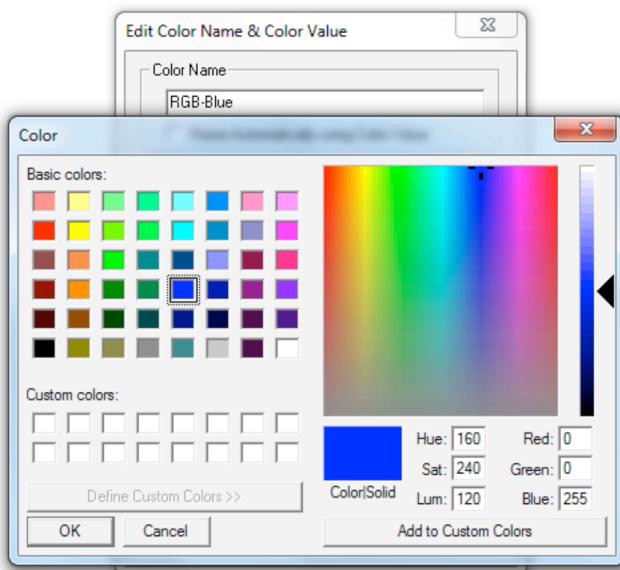
- Change all blue color components to purple color.

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 you want from the Color Picker. Or, Purple for our testing. And the press "OK". 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

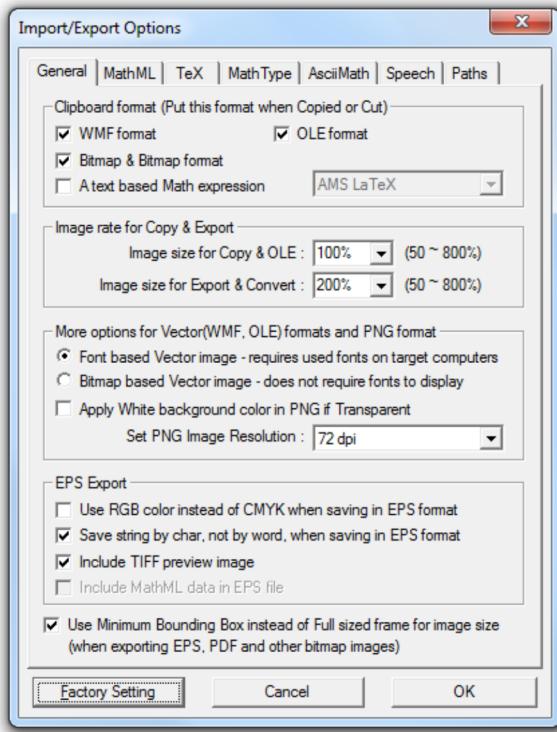
VI. Advanced Features

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 OLE objects, and options for the EPS format.

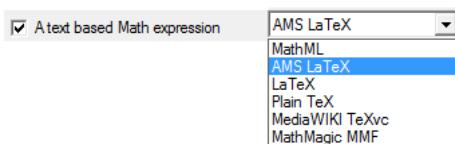


When a selection in the Editor window is Copied (Ctrl-C) or Cut (Ctrl-X), the selection is saved in the **Clipboard** to be used in MathMagic or in other applications. Because some formats are better supported than others depending on the application, MathMagic allows you to select from the formats commonly

used.

Most traditional Windows applications support the **WMF format** and **OLE object** well. Basically a vector format, the WMF format produces high-quality images even when enlarged or shrunk. A copy of **OLE** object is always saved in the Clipboard by default for compatibility with other OLE supported applications. Also, the WMF and OLE formats come 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.

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 BMP, PNG, JPEG, and GIF.

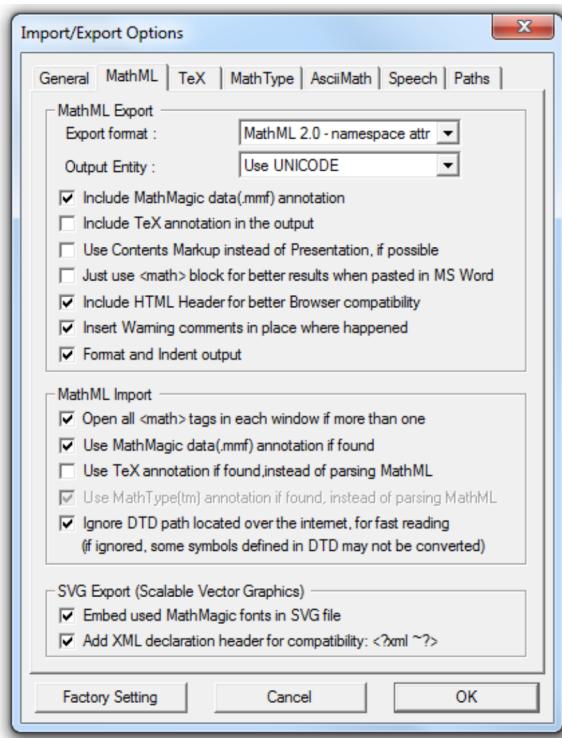
Under '**OLE Object format**', you can set the equation image format for OLE objects and WMF whether saved in **Bitmap based image** or **Font based Vector format**. The specified options are applied to both the equations saved in the Clipboard and the equations exported into files in the WMF format.

Font based vector equations require the used MathMagic fonts in the target computer if you need to send out the equations to others. Bitmap imaged based equations does not require fonts to display but the quality may be limited if enlarged or printed in a higher resolution. Bitmap based equations also takes more file size usually.

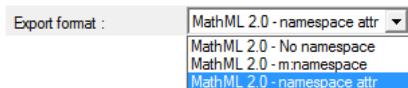
1.2 MathML

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.

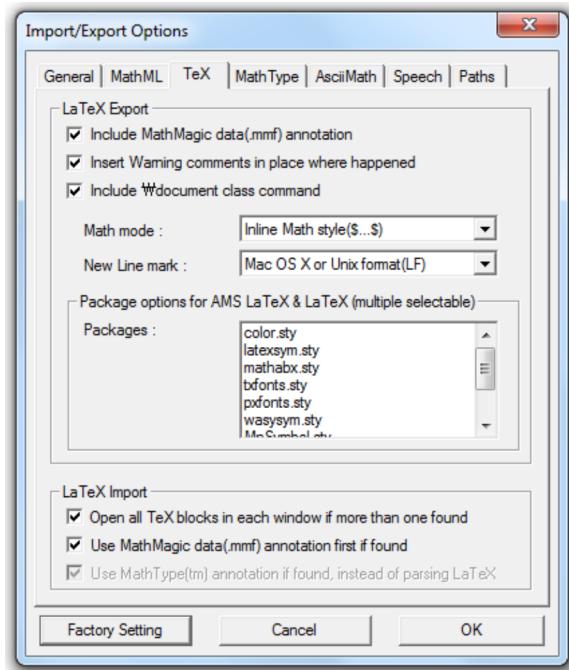
With "**Open all <math> tags in each window if more than one**" under 'MathML Import' enabled, each equation is converted and opened if there are multiple MathML equation areas in a single MathML file (.mml, .xml, .mathml, etc.). If this option is disabled, only the first $<\mathbf{math}>$ tag is converted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

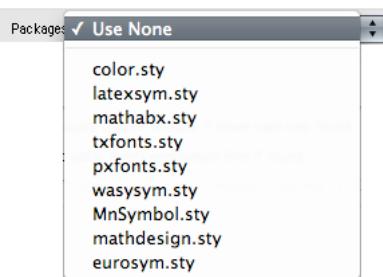
The options under this tab are used when the equation is exported in the **LaTeX format**, when a LaTeX file is imported, or when the TeX equation is pasted from the clipboard.



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.

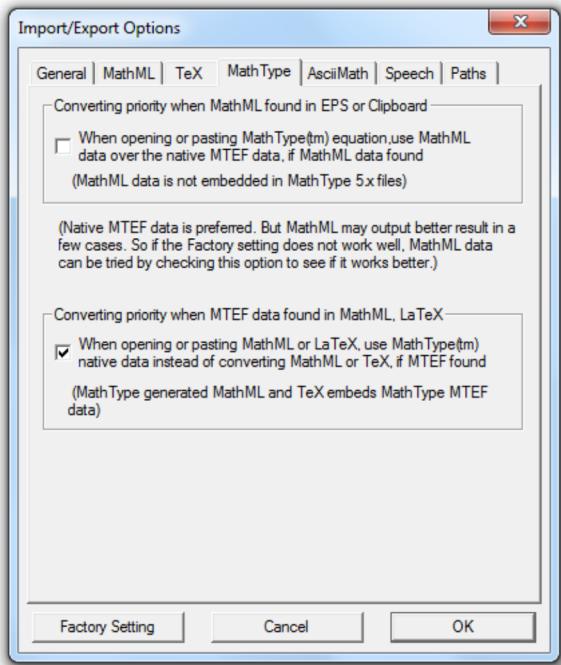


With '**Use MathMagic data(.mmf) annotation first if found**' enabled, if the LaTeX file contains MathMagic data, the equation is accessed using the MathMagic data, without converting the LaTeX data

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.

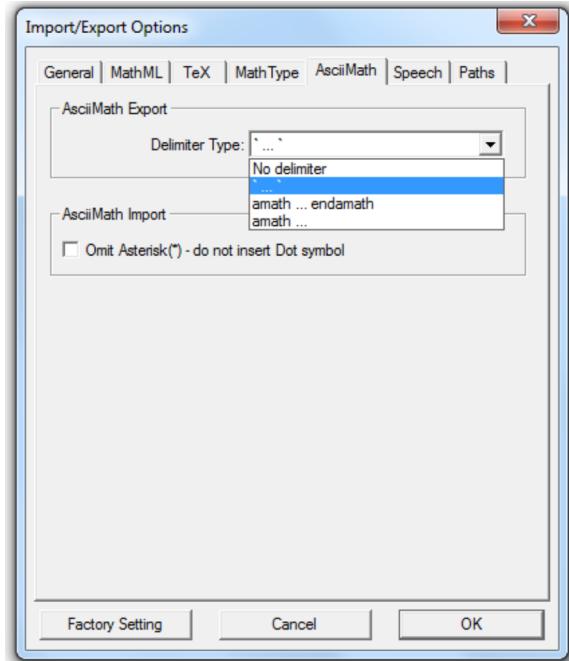


MathMagic does not support exporting in the MathType format. If you need to convert an equation into MathType in MathMagic, you can export it or copy it into the clipboard in LaTeX, Plain TeX, etc. and paste it in MathType, since these formats are supported by both applications.

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:



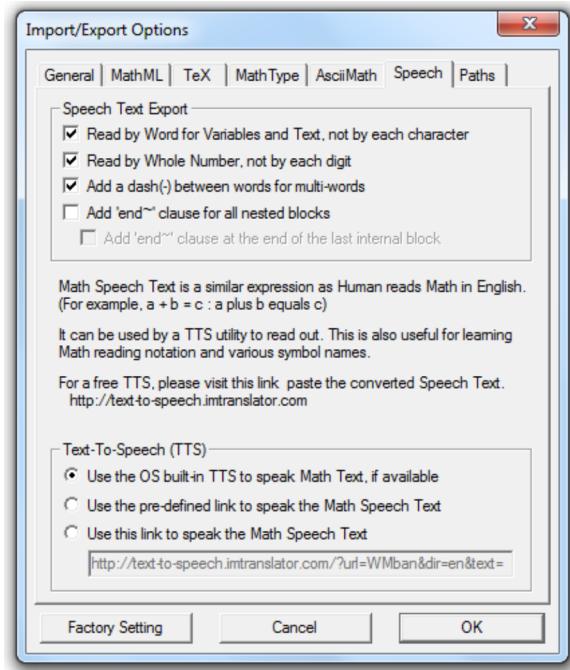
When an AsciiMath equation is **pasted** directly in MathMagic from the clipboard, MathMagic automatically recognizes it for the most part. However, if the equation is similar to LaTeX or TeX and MathMagic does not recognize it automatically, you can save it as a text file and set the extension to **.txt**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

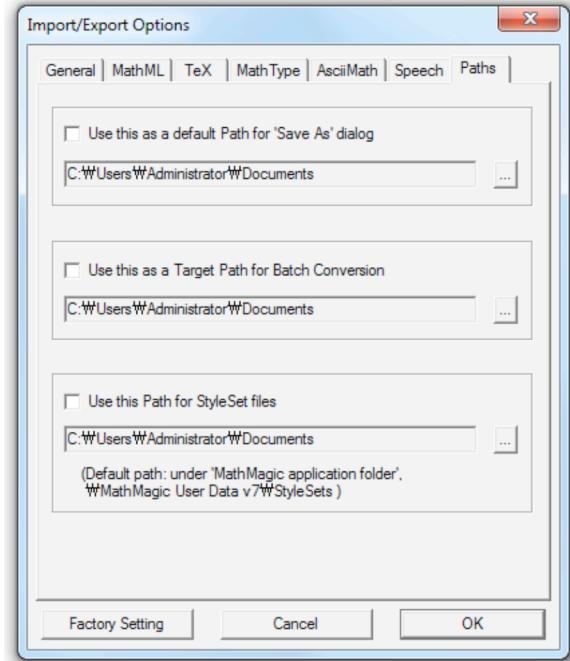
Before the equation is synthesized for speech, you can convert the equation into an English sentence as though an English speaker is reading the equation aloud. You can do this by accessing '**Copy as Speech Text**' or '**Speak All**' under the Edit menu.

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 '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.

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

User defined StyleSet path can also be specified in this dialog. If this is turned on and a path is specified, MathMagic will use the specified path for StyleSet files, instead of using the following default path:

(MathMagic application folder)\MathMagic User Data v7\StyleSets\

A network volume or shared folder can be used as well so that all team members can have the same Styleset files for a certain project collaboration.

Please note that MathMagic Personal Edition may not support the User defined StyleSet path.

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.

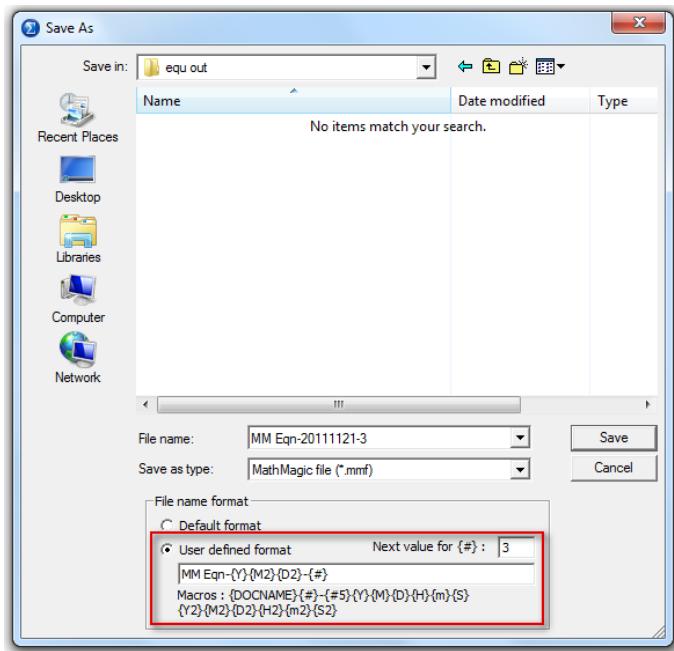
Macros can be used in the following windows related to saving files:

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.

To specify the default folder where the file is to be saved, and enable or disable it, please go to the '**Paths' tab** in the '**Import/Export Options**' window. The path entered in the 'Save As' field is used by default in this 'Save As' dialog.

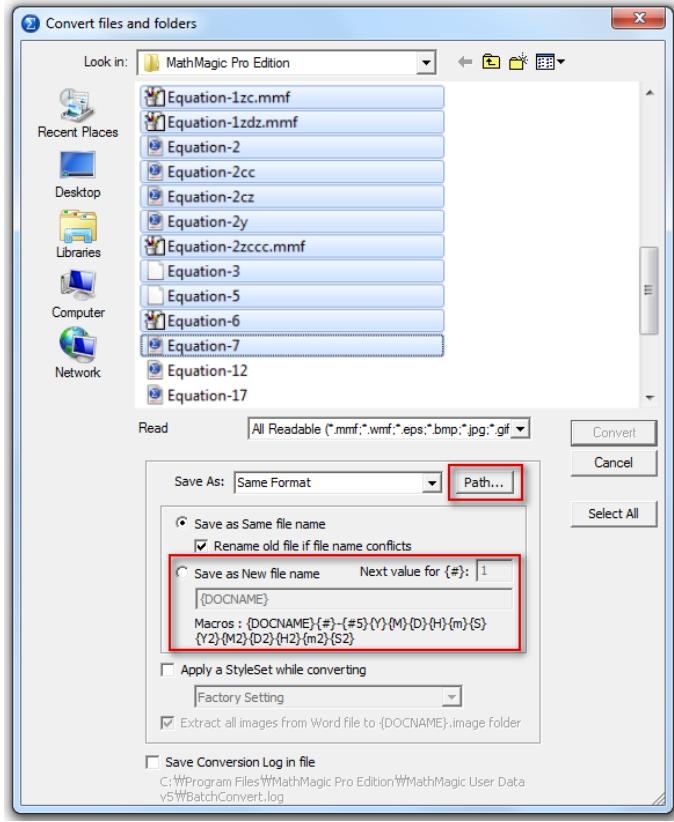


For more instructions on setting the Path, see 'VI. 1 Import/Export Options'.

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 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.

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 and Shape settings.

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

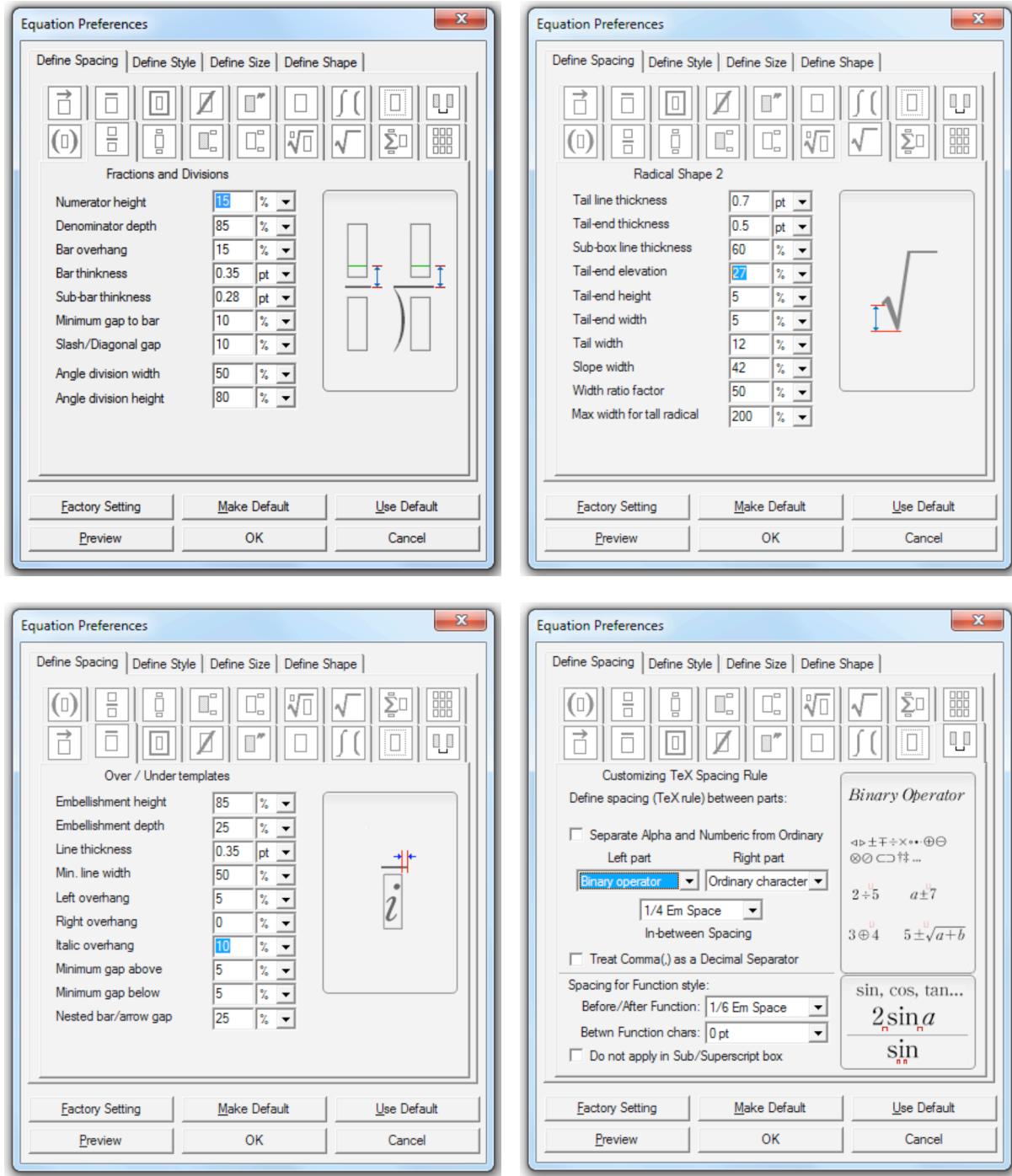


To close the window, you can press **Esc** key. In effect, this is the same as clicking the '**Cancel**' button.

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. Four of them are shown below.

When specifying the spacing, you can select from the following measurement units for most fields: %, pt, q, mm, inch and pica. 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.

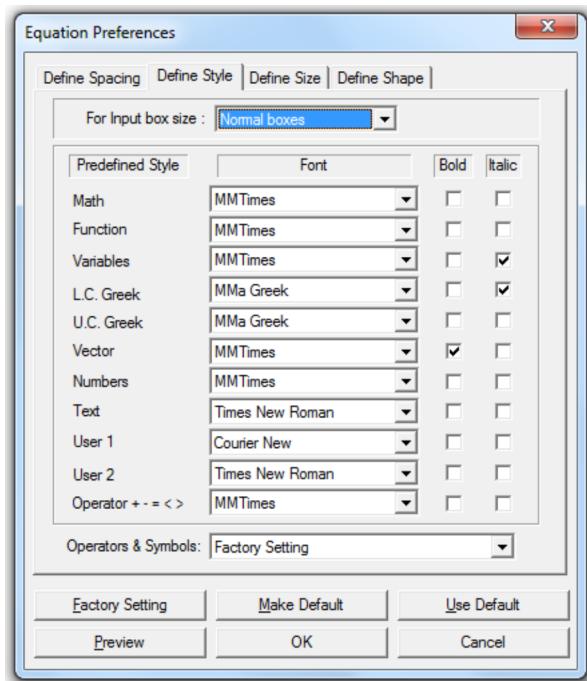
If you have specified the values you want and wish to apply them automatically to new documents in the future, click '**Make Default**'. If you wish to recall the values previously 'made default', click '**Use Default**'. '**Factory Settings**', '**Use Default**', and '**Make Default**' not only affect 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

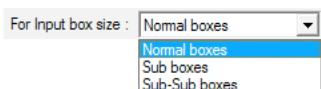
Under the 'Style' tab, you can change the 11 basic Style values. The values changed here affects all equations in the Editor window.

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' 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.

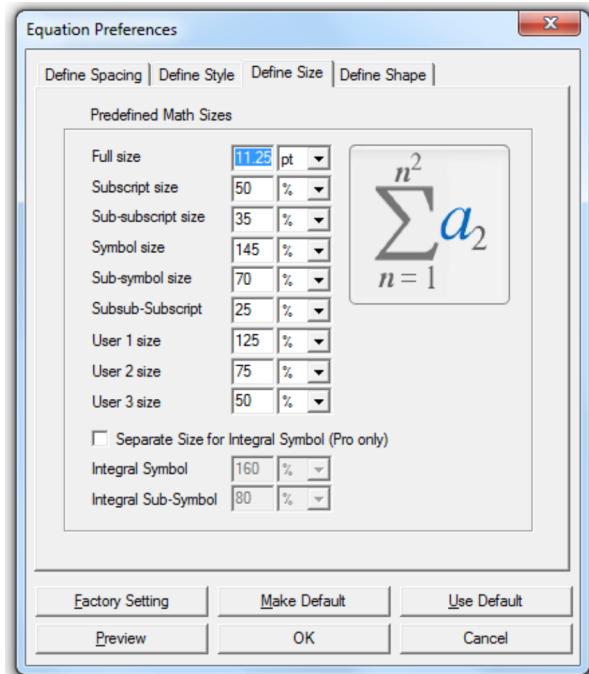
For '**Operators + - = < >**' down below, you can separately specify the font for the five commonly used operators that can be entered with the keyboard directly. This feature is implemented so that, even if you were to use the font designed for the text, the vertical alignment, the thickness of the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

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.

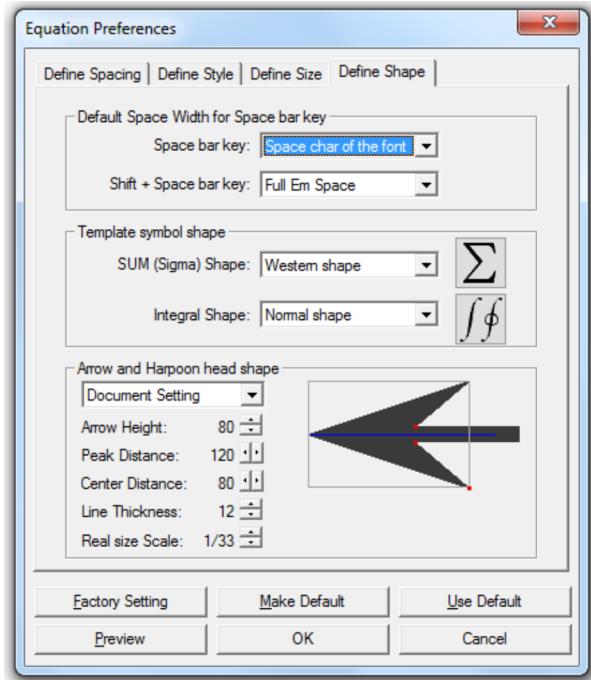
Some of these features are not available in MathMagic Personal Edition.

6. Preferences - Shape

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.

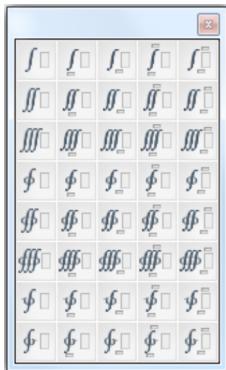
You can also specify the width of the space entered when you press the space bar.



7. Variable Length Integrals

MathMagic provides variable length integrals which extend vertically according to the height of the equation.

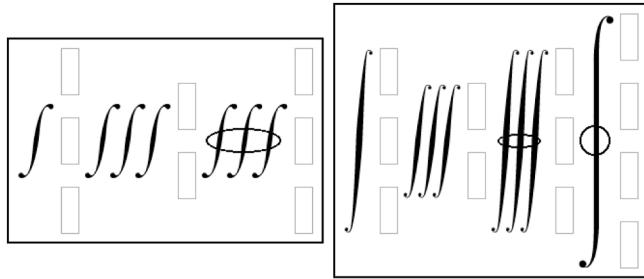
To insert a variable length integral, click any integral template while holding down the **Shift** key.



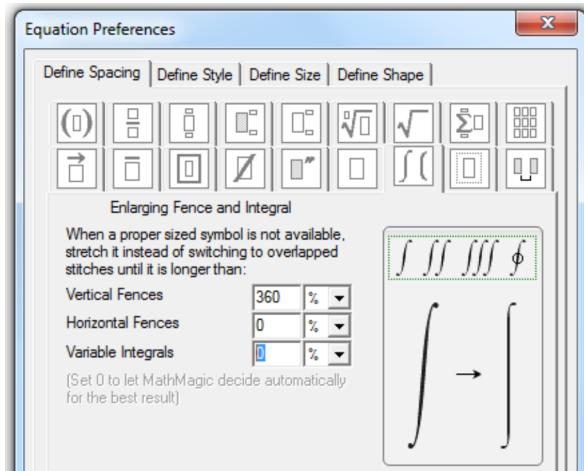
+ Click a template while holding down **Shift**

This feature is available for all templates included in the Integral palette.

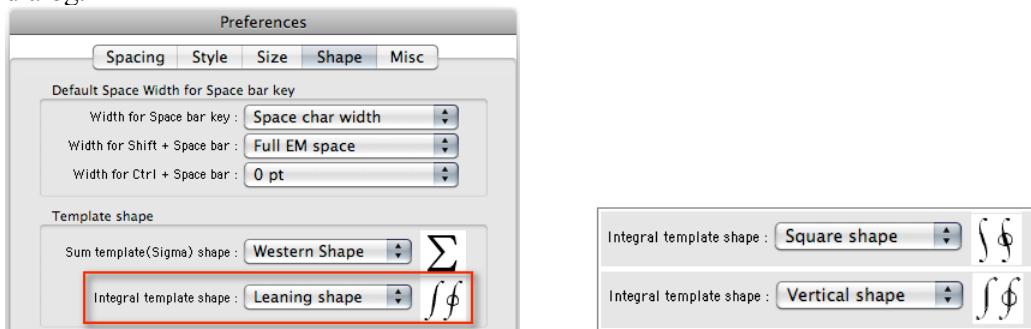
The following two examples show the difference between integrals and variable length integrals. The example on the left shows regular integrals, and the example on the right variable length integrals. These examples will help you better understand the function and purpose of variable length integrals.



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.



And the shape of Integral symbol can be selected from the following 3 shapes from Preferences -> Shape dialog.

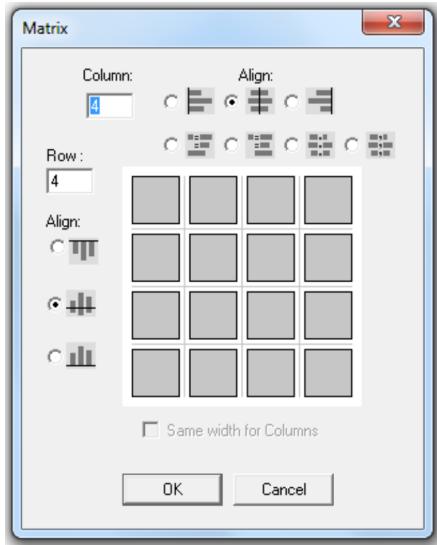


8. Custom Matrix

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 **Ctrl-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 array**. 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.

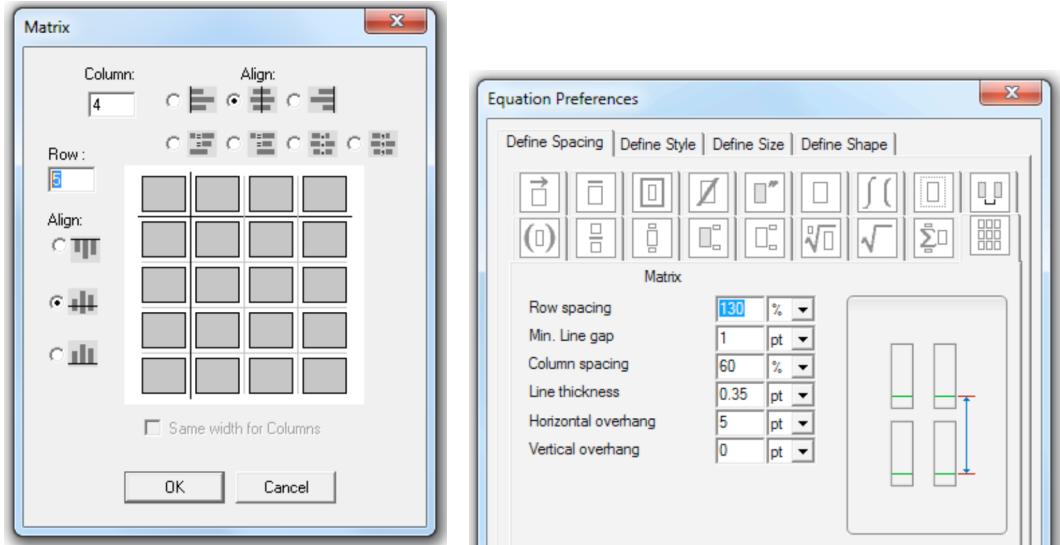
You can also access the '**Matrix Reloaded**' sub-menu under the 'Format' menu to utilize a **variety of matrix editing features**, including border definition and alignment options.

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 a simple table, as shown below, or a form for multi-level calculations.

	x	y	z	sum
a	3	5	7	
b	1	6	4	
c	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.

Color can be applied to Matrix lines in two approaches. You can create a matrix first, and then select the matrix and apply your color to the selection as you do with other characters.

This is a sample to change from the default Black color to Red color by applying the Red color to the whole selection.

	<i>x</i>	<i>y</i>	<i>z</i>	
<i>a</i>	3	5	7	...
<i>c</i>	1	6	4	...
<i>e</i>	2	8	3	...

→

	<i>x</i>	<i>y</i>	<i>z</i>	
<i>a</i>	3	5	7	...
<i>c</i>	1	6	4	...
<i>e</i>	2	8	3	...

Or, you can select each line by **Alt-clicking**, and then apply a color to the selected line. This way, you can apply various colors to each line, as shown below. **It is easier to have a 800% or higher view rate for the current editor window so that you can Alt-click on the exact line.**

	<i>x</i>	<i>y</i>	<i>z</i>	
<i>a</i>	3	5	7	...
<i>c</i>	1	6	4	...
<i>e</i>	2	8	3	...

→

	<i>x</i>	<i>y</i>	<i>z</i>	
<i>a</i>	3	5	7	...
<i>c</i>	1	6	4	...
<i>e</i>	2	8	3	...

Note: This color line feature may not be available in old versions.

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 color** 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:

[\(\MathMagic application folder\)\MathMagic User Data v7\Color\UserDefaultColor](file:///C:/Program%20Files/MathMagic/MathMagic%20User%20Data/v7/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**.

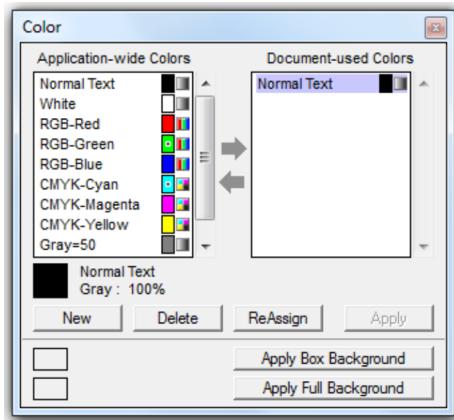
Document color styles are saved in each MathMagic document or each equation, not in a separate file. So,

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 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 colors 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.

[\(MathMagic application folder\)\MathMagic User Data v7\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.

9.5 Sharing and Saving Colored Equations

As with other equations, colored equations can be shared in the following ways:

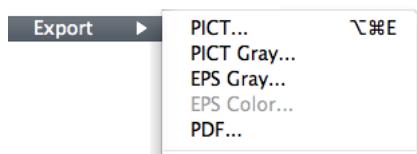
- Save in WMF, PNG, JPEG, EPS, or MathMagic format
- Paste in other applications or other MathMagic documents
- Drag & drop in other applications
- Copy into clipboard

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 WMF, 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.

9.6 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' format under the 'Save As' dialog 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+Ctrl+S**. Alternatively, you can enable '**Display Color in Gray**' under the 'View' 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.

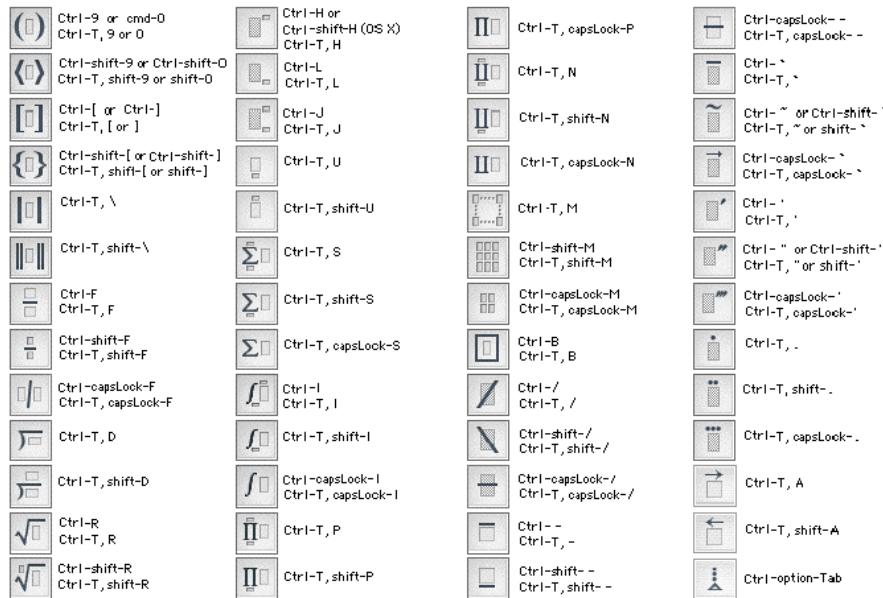
Email: sales@mathmagic.com
Tel: 1-778-880-0605

VIII. Appendix

1. Shortcut keys

1.1 Template Shortcut Keys

All template shortcut keys begin with **Ctrl-T**. Frequently used templates have dedicated shortcut keys, for example, Ctrl-F for Fraction template.



1.2 Symbol Shortcut Keys

All symbol shortcut keys begin with **Ctrl-K**.

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

1.3 Greek Shortcut Keys

All Greek symbols shortcut keys begin with **Ctrl-G**.

	Ctrl-G, shift-A		Ctrl-G, shift-N		Ctrl-G, A		Ctrl-G, N
	Ctrl-G, shift-B		Ctrl-G, shift-O		Ctrl-G, B		Ctrl-G, O
	Ctrl-G, shift-C		Ctrl-G, shift-P		Ctrl-G, C		Ctrl-G, P
	Ctrl-G, shift-D		Ctrl-G, shift-Q		Ctrl-G, D		Ctrl-G, Q
	Ctrl-G, shift-E		Ctrl-G, shift-R		Ctrl-G, E		Ctrl-G, R
	Ctrl-G, shift-F		Ctrl-G, shift-S		Ctrl-G, F		Ctrl-G, S
	Ctrl-G, shift-G		Ctrl-G, shift-T		Ctrl-G, G		Ctrl-G, T
	Ctrl-G, shift-H		Ctrl-G, shift-U		Ctrl-G, H		Ctrl-G, U
	Ctrl-G, shift-I		Ctrl-G, shift-W		Ctrl-G, I		Ctrl-G, W
	Ctrl-G, shift-K		Ctrl-G, shift-X		Ctrl-G, K		Ctrl-G, X
	Ctrl-G, shift-L		Ctrl-G, shift-Y		Ctrl-G, L		Ctrl-G, Y
	Ctrl-G, shift-M		Ctrl-G, shift-Z		Ctrl-G, M		Ctrl-G, Z
	Ctrl-G, shift-J		Ctrl-G, shift-V		Ctrl-G, J		Ctrl-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.
Alt-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
left arrow	At the end of a template box, move to the beginning of the next box Move cursor to the left
down arrow	At the beginning of a box, move to the end of previous box
up arrow	Move to the nearest point of the next line Move to the nearest point of the previous line
Ctrl-right arrow	Move to the end of the line
Ctrl-left arrow	Move to the beginning of the line
Ctrl-down arrow	Move to the end of the document
Ctrl-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-ctrl-right arrow	Move to the end of the line, and select in-between contents
shift-ctrl-left arrow	Move to the beginning of the line, and select in-between contents
shift-ctrl-down arrow	Move to the end of the document, and select in-between contents
shift-ctrl-up arrow	Move to the beginning of the document, and select in-between contents
Ctrl-Alt-right arrow	Nudge(move) the current selection to the right 1-point of the current view
Ctrl-Alt-left arrow	Nudge(move) the current selection to the left 1-point of the current view
Ctrl-Alt-down arrow	Nudge(move) the current selection to the down 1-point of the current view
Ctrl-Alt-up arrow	Nudge(move) the current selection to the up 1-point of the current view
home	Move cursor to the beggining of the current box or line
end	Move cursor to the end of the current box or line
Ctrl-home	Move cursor to the beggining of the document
Ctrl-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
shift-return	In the middle of a box, breaks the line and move the right part to the next line 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
Menu key (Application key)	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.

<u>Actions</u>	<u>Behavior</u>
click within a document window	Move cursor to nearest insertion point
double click within a document window	Select the continuous word or equation in the same level
triple click within a document window	Select the whole line including sub-level boxes
vertical wheel	Scrolls vertically the current document window or Clips floating window where the mouse point is on, if the vertical scroll bar is active
horizontal wheel or shift-vertical wheel	Scrolls horizontally the current document window or Clips floating window where the mouse point is on, if the horizontal scroll bar is active
Alt-Windows-mouse scroll	Increase or Decrease the view rate of the current editor window by 100%
shift-Alt-Windows-mouse scroll	Increase or Decrease the view rate of the current editor window by 10%
shift-click	Select the part between the cursor location and clicked point
Alt-click	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.

4. The list of MathMagic fonts

Here are the list of all MathMagic fonts by family name, font styles, and the table for bundled fonts per MathMagic package.

Tables are devided into two - one is for the math body text fonts, the other is for Greek fonts and Symbol fonts.

The list may not include all the latest fonts as InfoLogic designs and releases new fonts from time to time. MathMagic products often come with commonly used default fonts bundled. The number of bundled fonts may vary depending on the MathMagic products and over the versions.

If you'd like to use more fonts than the bundled fonts, "**MathMagic Fonts Pack**" can be purchased.

"MathMagic Fonts Pack" comes with all the latest fonts and includes various fonts and style to meet your specific design needs.

If you'd like to use some MathMagic fonts with other applications and documents on a computer that does not have a valid MathMagic license, "**MathMagic Fonts Pack**" can be purchased as well.

1. The List of MathMagic Fonts: Math Body Text fonts (2 pages)

2. The List of MathMagic Fonts: Greek fonts and Symbol fonts (3 pages)

1		MathMagic Fonts Pack (Math Text fonts)					www.mathmagic.com
2							(Jan 2014)
3		Included in					
4	Family name	Included Faces	Note	Pro	Personal	Lite	Fonts pack
6	MMTimes-Family		Body text font				
7		MMTimes.otf		Yes	Yes	Yes	Yes
8		MMTimes-Bold.otf		Yes	Yes	Yes	Yes
9		MMTimes-Italic.otf		Yes	Yes	Yes	Yes
10		MMTimes-BoldItalic.otf		Yes	Yes	Yes	Yes
11	MMCenturyNew-Family		Body text font				
12		MMCenturyNew-Regular.otf		Yes	Yes	Yes	Yes
13		MMCenturyNew-Bold.otf		Yes	Yes	Yes	Yes
14		MMCenturyNew-Italic.otf		Yes	Yes	Yes	Yes
15		MMCenturyNew-BoldItalic.otf	Body text font	Yes	Yes	Yes	Yes
16	MMCenturyNewRD-Family						
17		MMCenturyNewRD-Regular.otf		Yes	Yes		Yes
18		MMCenturyNewRD-Bold.otf		Yes	Yes		Yes
19		MMCenturyNewRD-Italic.otf		Yes	Yes		Yes
20		MMCenturyNewRD-BoldItalic.otf		Yes	Yes		Yes
21	MMTextBook-Family		Elementary Textbook				
22		MMTextBook.otf		Yes	Yes	Yes	Yes
23		MMTextBook-Bold.otf		Yes	Yes	Yes	Yes
24		MMTextBook-Italic.otf		Yes	Yes	Yes	Yes
25		MMTextBook-BoldItalic.otf		Yes	Yes	Yes	Yes
26	MMTextBookB-Family		Elementary Textbook				
27		MMTextBookB.otf		Yes			Yes
28		MMTextBookB-Bold.otf		Yes			Yes
29		MMTextBookB-Italic.otf		Yes			Yes
30		MMTextBookB-BoldItalic.otf		Yes			Yes
31	MMCenturyOld-Family		Body text font				
32		MMCenturyOld.otf		Yes	Yes		Yes
33		MMCenturyOld-Bold.otf		Yes	Yes		Yes
34		MMCenturyOld-Italic.otf		Yes	Yes		Yes
35		MMCenturyOld-BoldItalic.otf		Yes	Yes		Yes
36	MMCenturyOldO-Family		Body text font				
37		MMCenturyOldO.otf					Yes
38		MMCenturyOldO-Bold.otf					Yes
39		MMCenturyOldO-Italic.otf					Yes
40		MMCenturyOldO-BoldItalic.otf					Yes
41	MMCenturyOldK-Family		Body text font				
42		MMCenturyOldK.otf					Yes
43		MMCenturyOldK-Bold.otf					Yes
44		MMCenturyOldK-Italic.otf					Yes
45		MMCenturyOldK-BoldItalic.otf	Body text font				Yes
46	MMCenturyOldE-Family						
47		MMCenturyOldE.otf					Yes
48		MMCenturyOldE-Bold.otf					Yes
49		MMCenturyOldE-Italic.otf					Yes
50		MMCenturyOldE-BoldItalic.otf					Yes
51	MMCenturyOldS-Family		Body text font				
52		MMCenturyOldS.otf					Yes
53		MMCenturyOldS-Bold.otf					Yes
54		MMCenturyOldS-Italic.otf					Yes
55		MMCenturyOldS-BoldItalic.otf					Yes

56	MMSchoolRD-Family		Body text font				
57		MMSchoolRD.otf		Yes	Yes		Yes
58		MMSchoolRD-Bold.otf		Yes	Yes		Yes
59		MMSchoolRD-Italic.otf		Yes	Yes		Yes
60		MMSchoolRD-BoldItalic.otf		Yes	Yes		Yes
61							
63	MMaCenturyK-Family		Body text font				
64		MMaCenturyK-Regular.otf		Yes	Yes		Yes
65		MMaCenturyK-Italic.otf		Yes	Yes		Yes
66		MMaCenturyK-BoldItalic.otf		Yes	Yes		Yes
67		MMaCenturyK-Bold.otf		Yes	Yes		Yes
68	MMaCenturyKS-Family		Body text font				
69		MMaCenturyKS-Regular.otf		Yes			Yes
70		MMaCenturyKS-Italic.otf		Yes			Yes
71		MMaCenturyKS-BoldItalic.otf		Yes			Yes
72		MMaCenturyKS-Bold.otf		Yes			Yes
73	MMaCenturyKSS-Family		Body text font				
74		MMaCenturyKSS-Regular.otf		Yes			Yes
75		MMaCenturyKSS-Italic.otf		Yes			Yes
76		MMaCenturyKSS-BoldItalic.otf		Yes			Yes
77		MMaCenturyKSS-Bold.otf		Yes			Yes
78							
79	MMaCentury-Family		Body text font				
80		MMaCentury-Regular.otf		Yes	Yes	Yes	Yes
81		MMaCentury-Italic.otf		Yes	Yes	Yes	Yes
82		MMaCentury-BoldItalic.otf		Yes	Yes	Yes	Yes
83		MMaCentury-Bold.otf		Yes	Yes	Yes	Yes
84	MMaCenturyS-Family		Body text font				
85		MMaCenturyS-Regular.otf		Yes			Yes
86		MMaCenturyS-Italic.otf		Yes			Yes
87		MMaCenturyS-BoldItalic.otf		Yes			Yes
88		MMaCenturyS-Bold.otf		Yes			Yes
89	MMaCenturySS-Family		Body text font				
90		MMaCenturySS-Regular.otf		Yes			Yes
91		MMaCenturySS-Italic.otf		Yes			Yes
92		MMaCenturySS-BoldItalic.otf		Yes			Yes
93		MMaCenturySS-Bold.otf		Yes			Yes
94	MMaCenturyB-Family		Body text font				
95		MMaCenturyB-Italic.otf					Yes
96		MMaCenturyB-BoldItalic.otf					Yes
97	MMaCenturyJ-Family		Body text font				
98		MMaCenturyJ-Italic.otf					Yes
99		MMaCenturyJ-BoldItalic.otf					Yes
100	MMaCenturyJB-Family		Body text font				
101		MMaCenturyJB-Italic.otf					Yes
102		MMaCenturyJB-BoldItalic.otf					Yes
103	MMaTextBook-Family		Elementary Textbook				
104		MMaTextBook-Regular.otf		Yes	Yes		Yes
105		MMaTextBook-Italic.otf		Yes	Yes		Yes
106		MMaTextBook-BoldItalic.otf		Yes	Yes		Yes
107		MMaTextBook-Bold.otf		Yes	Yes		Yes
109			Number of Fonts	56	36	16	78
110	The list of bundled fonts may vary depending on the MathMagic versions and platforms. InfoLogic reserves the right to change the font configuration without prior notice.						
111	(c) 1998~2014 InfoLogic. All rights reserved. www.mathmagic.com						

1		MathMagic Fonts Pack					
2		(Greek and Symbol fonts)					www.mathmagic.com
3							(Jan 2014)
4	Family name	Included Faces	Note	Pro	Personal	Lite	Fonts pack
6	Greek fonts						
7	MMGreek-Family		Greek font				
8		MMGreek.otf		Yes	Yes	Yes	Yes
9		MMGreek-Italic.otf		Yes	Yes	Yes	Yes
10		MMGreek-BoldItalic.otf		Yes	Yes	Yes	Yes
11		MMGreek-Bold.otf		Yes	Yes	Yes	Yes
12	MMCenturyOldGreek		Greek font				
13		MMCenturyOldGreek.otf		Yes	Yes	Yes	Yes
14		MMCenturyOldGreek-Italic.otf		Yes	Yes	Yes	Yes
15		MMCenturyOldGreek-BoldItalic.otf		Yes	Yes		Yes
16		MMCenturyOldGreek-Bold.otf		Yes	Yes		Yes
17	MMaGreek-Family		Greek font				
18		MMaGreek-Regular.otf		Yes	Yes	Yes	Yes
19		MMaGreek-Italic.otf		Yes	Yes	Yes	Yes
20		MMaGreek-BoldItalic.otf		Yes	Yes	Yes	Yes
21		MMaGreek-Bold.otf		Yes	Yes	Yes	Yes
22	MMaGreekS-Family		Greek font				
23		MMaGreekS-Regular.otf		Yes			Yes
24		MMaGreekS-Italic.otf		Yes			Yes
25		MMaGreekS-BoldItalic.otf		Yes			Yes
26		MMaGreekS-Bold.otf		Yes			Yes
27	MMaGreekSS-Family		Greek font				
28		MMaGreekSS-Regular.otf					Yes
29		MMaGreekSS-Italic.otf					Yes
30		MMaGreekSS-BoldItalic.otf					Yes
31		MMaGreekSS-Bold.otf					Yes
32	MMaGreekB-Family		Greek font				
33		MMaGreekB-Italic.otf					Yes
34		MMaGreekB-BoldItalic.otf					Yes
35	Special Math Style fonts						
36	MMaPascal	MMaPascal-Regular.otf	Calligraphic	Yes	Yes	Yes	Yes
37		MMaPascal-Bold.otf	Calligraphic	Yes	Yes	Yes	Yes
38	MMaGauss	MMaGauss-Regular.otf	Calligraphic	Yes	Yes	Yes	Yes
39		MMaGauss-Bold.otf	Calligraphic	Yes	Yes	Yes	Yes
40	MMaFraktur	MMaFraktur-Regular.otf	Fraktur	Yes	Yes	Yes	Yes
41		MMaFraktur-Bold.otf	Fraktur	Yes	Yes	Yes	Yes
42	MMaFermat	MMaFermat-Regular.otf	Blackboard Bold	Yes	Yes	Yes	Yes
43		MMaFermat-Bold.otf	Blackboard Bold	Yes	Yes	Yes	Yes
44							
45	MM Symbols		MathMagic & LaTeX symbols				
46	MMArrow	MMArrow.otf		Yes	Yes	Yes	Yes
47		MMArrow-Bold.otf		Yes	Yes		Yes
48		MMArrow-BoldItalic.otf		Yes			Yes
49		MMArrow-Italic.otf		Yes			Yes
50	MMBinary	MMBinary.otf		Yes	Yes	Yes	Yes
51		MMBinary-Bold.otf		Yes	Yes		Yes
52		MMBinary-BoldItalic.otf		Yes			Yes
53		MMBinary-Italic.otf		Yes			Yes
54	MMEtc	MMEtc.otf		Yes	Yes	Yes	Yes
55		MMEtc-Bold.otf		Yes	Yes		Yes
56		MMEtc-BoldItalic.otf		Yes			Yes

57		MMEtc-Italic.otf		Yes			Yes	
58	MMExtra	MMExtra.otf		Yes	Yes	Yes	Yes	
59		MMExtra-Bold.otf		Yes	Yes		Yes	
60		MMExtra-BoldItalic.otf		Yes			Yes	
61		MMExtra-Italic.otf		Yes			Yes	
62	MMNegate	MMNegate.otf		Yes	Yes	Yes	Yes	
63		MMNegate-Bold.otf		Yes	Yes		Yes	
64		MMNegate-BoldItalic.otf		Yes			Yes	
65		MMNegate-Italic.otf		Yes			Yes	
66	MMRelation	MMRelation.otf		Yes	Yes	Yes	Yes	
67		MMRelation-Bold.otf		Yes	Yes		Yes	
68		MMRelation-BoldItalic.otf		Yes			Yes	
69		MMRelation-Italic.otf		Yes			Yes	
70		MathMagic Variable symbols						
71	MMVariable	MMVariable.otf		Yes	Yes	Yes	Yes	
72		MMVariable-Bold.otf		Yes	Yes		Yes	
73		MMVariable2.otf		Yes	Yes	Yes	Yes	
74		MMVariable2-Bold.otf		Yes	Yes		Yes	
75		MMVariableA.otf		Yes	Yes	Yes	Yes	
76		MMVariableA-Bold.otf		Yes	Yes		Yes	
77		MMVariableB.otf		Yes	Yes	Yes	Yes	
78		MMVariableB-Bold.otf		Yes	Yes		Yes	
79		MMVariableC.otf		Yes	Yes	Yes	Yes	
80		MMVariableC-Bold.otf		Yes	Yes		Yes	
81		MMVariableD.otf		Yes	Yes	Yes	Yes	
82		MMVariableD-Bold.otf		Yes	Yes		Yes	
83		MMVariableF.otf		Yes	Yes	Yes	Yes	
84		MMVariableF-Bold.otf		Yes	Yes		Yes	
85								
86								
87								
88	MMa Symbols		MathMagic & LaTeX symbols					
89	MMArrow	MMArrow-Regular.otf		Yes	Yes	Yes	Yes	
90		MMArrow-Bold.otf		Yes	Yes		Yes	
91		MMArrow-BoldItalic.otf		Yes			Yes	
92		MMArrow-Italic.otf		Yes			Yes	
93	MMABinary	MMABinary-Regular.otf		Yes	Yes	Yes	Yes	
94		MMABinary-Bold.otf		Yes	Yes		Yes	
95		MMABinary-BoldItalic.otf		Yes			Yes	
96		MMABinary-Italic.otf		Yes			Yes	
97	MMAEtc	MMAEtc-Regular.otf		Yes	Yes	Yes	Yes	
98		MMAEtc-Bold.otf		Yes	Yes		Yes	
99		MMAEtc-BoldItalic.otf		Yes			Yes	
100		MMAEtc-Italic.otf		Yes			Yes	
101	MMExtra	MMExtra-Regular.otf		Yes	Yes	Yes	Yes	
102		MMExtra-Bold.otf		Yes	Yes		Yes	
103		MMExtra-BoldItalic.otf		Yes			Yes	
104		MMExtra-Italic.otf		Yes			Yes	
105	MMANegate	MMANegate-Regular.otf		Yes	Yes	Yes	Yes	
106		MMANegate-Bold.otf		Yes	Yes		Yes	
107		MMANegate-BoldItalic.otf		Yes			Yes	
108		MMANegate-Italic.otf		Yes			Yes	
109	MMARelation	MMARelation-Regular.otf		Yes	Yes	Yes	Yes	
110		MMARelation-Bold.otf		Yes	Yes		Yes	
111		MMARelation-BoldItalic.otf		Yes			Yes	
112		MMARelation-Italic.otf		Yes			Yes	

113			MathMagic Variable symbols				
114	MMaVariable	MMaVariable-Regular.otf		Yes	Yes	Yes	Yes
115		MMaVariable-Bold.otf		Yes	Yes		Yes
116		MMaVariable2-Regular.otf		Yes	Yes	Yes	Yes
117		MMaVariable2-Bold.otf		Yes	Yes		Yes
118		MMaVariableA-Regular.otf		Yes	Yes	Yes	Yes
119		MMaVariableA-Bold.otf		Yes	Yes		Yes
120		MMaVariableB-Regular.otf		Yes	Yes	Yes	Yes
121		MMaVariableB-Bold.otf		Yes	Yes		Yes
122		MMaVariableC-Regular.otf		Yes	Yes	Yes	Yes
123		MMaVariableC-Bold.otf		Yes	Yes		Yes
124		MMaVariableD-Regular.otf		Yes	Yes	Yes	Yes
125		MMaVariableD-Bold.otf		Yes	Yes		Yes
126		MMaVariableF-Regular.otf		Yes	Yes	Yes	Yes
127		MMaVariableF-Bold.otf		Yes	Yes		Yes
128							
129	MMa Symbols S		MathMagic & LaTeX symbols				
130	MMaArrowS	MMaArrowS-Regular.otf		Yes		Yes	
131		MMaArrowS-Bold.otf				Yes	
132	MMaBinaryS	MMaBinaryS-Regular.otf		Yes		Yes	
133		MMaBinaryS-Bold.otf				Yes	
134	MMaEtcS	MMaEtcS-Regular.otf		Yes		Yes	
135		MMaEtcS-Bold.otf				Yes	
136	MMaExtraS	MMaExtraS-Regular.otf		Yes		Yes	
137		MMaExtraS-Bold.otf				Yes	
138	MMaNegateS	MMaNegateS-Regular.otf		Yes		Yes	
139		MMaNegateS-Bold.otf				Yes	
140	MMaRelationS	MMaRelationS-Regular.otf		Yes		Yes	
141		MMaRelationS-Bold.otf				Yes	
142			MathMagic Variable symbols				
143	MMaVariableS	MMaVariableS-Regular.otf		Yes		Yes	
144		MMaVariableS-Bold.otf				Yes	
145		MMaVariable2S-Regular.otf		Yes		Yes	
146		MMaVariable2S-Bold.otf				Yes	
147		MMaVariableAS-Regular.otf		Yes		Yes	
148		MMaVariableAS-Bold.otf				Yes	
149		MMaVariableBS-Regular.otf		Yes		Yes	
150		MMaVariableBS-Bold.otf				Yes	
151		MMaVariableCS-Regular.otf		Yes		Yes	
152		MMaVariableCS-Bold.otf				Yes	
153		MMaVariableDS-Regular.otf		Yes		Yes	
154		MMaVariableDS-Bold.otf				Yes	
155		MMaVariableFS-Regular.otf		Yes		Yes	
156		MMaVariableFS-Bold.otf				Yes	
157							
158	MMa Symbols SS		MathMagic & LaTeX symbols				
159	MMaArrowSS	MMaArrowSS-Regular.otf		Yes		Yes	
160		MMaArrowSS-Bold.otf				Yes	
161	MMaBinarySS	MMaBinarySS-Regular.otf		Yes		Yes	
162		MMaBinarySS-Bold.otf				Yes	
163	MMaEtcSS	MMaEtcSS-Regular.otf		Yes		Yes	
164		MMaEtcSS-Bold.otf				Yes	
165	MMaExtraSS	MMaExtraSS-Regular.otf		Yes		Yes	
166		MMaExtraSS-Bold.otf				Yes	
167	MMaNegateSS	MMaNegateSS-Regular.otf		Yes		Yes	
168		MMaNegateSS-Bold.otf				Yes	
169	MMaRelationSS	MMaRelationSS-Regular.otf		Yes		Yes	

170		MMaRelationSS-Bold.otf					Yes
171			MathMagic Variable symbols				
172	MMaVariableSS	MMaVariableSS-Regular.otf		Yes			Yes
173		MMaVariableSS-Bold.otf					Yes
174		MMaVariable2SS-Regular.otf		Yes			Yes
175		MMaVariable2SS-Bold.otf					Yes
176		MMaVariableASS-Regular.otf		Yes			Yes
177		MMaVariableASS-Bold.otf					Yes
178		MMaVariableBSS-Regular.otf		Yes			Yes
179		MMaVariableBSS-Bold.otf					Yes
180		MMaVariableCSS-Regular.otf		Yes			Yes
181		MMaVariableCSS-Bold.otf					Yes
182		MMaVariableDSS-Regular.otf		Yes			Yes
183		MMaVariableDSS-Bold.otf					Yes
184		MMaVariableFSS-Regular.otf		Yes			Yes
185		MMaVariableFSS-Bold.otf					Yes
186							
188			Number of Symbol Fonts	126	72	44	158
189							
190	The list of bundled fonts may vary depending on the MathMagic versions and platforms. InfoLogic reserves the right to change the font configuration without prior notice.						
191	(c) 1998~2014 InfoLogic. All rights reserved. www.mathmagic.com						

5. MathMagic font samples

Here are some of the MathMagic font samples. Some characters are not listed here even though the font contains more glyphs.

There are more fonts that are not listed here. Please see the "MathMagic Fonts" folder inside MathMagic Personal Edition or MathMagic Pro Edition folder after installation, to see all the fonts that come with your copy of MathMagic. Bundled fonts can also be found inside the Application's package contents, available from right-button clicked contextual menu on the MathMagic application.

New fonts may be provided from time to time for the registered users. If there are any character glyphs you wish to include in the future MathMagic font release, please feedback to our customer support team.

Customized fonts or Custom developed fonts may be available for a fee upon request. MathMagic application can also be customized to use client-specific fonts.

Please contact sales@mathmagic.com for the details.

MMArrow

MMBinary

MMCenturyNew

!"#\$%&'()*+,.0123456789;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMCenturyNew Italic

!'"#\$%&'()*+,. /0123456789;:<=>?@ABCDEFGHIJKLMNPQR
STUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMCenturyNewRD

!"#\$%&'()*+,.0123456789;:<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMCenturyNewRD BoldItalic

!"#\$%&'()*)+,.:/0123456789;:<=>?@ABCDEFGHIJKLMNO

PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMCenturyOld

!"#\$%&'()*+,./0123456789;,<=>?@ABCDEFGHIJKLM NOP
QRSTUVWXYZN]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMCenturyOldE - *Italic*

!"#\$%&'() *+.,/0123456789;:<=>?@ABCDEFGHIJKLMNP
QRSTUVWXYZ\|^_`**abcdefghijklmnopqrstuvwxyz{|\}**~

MMCenturyOldK

!"#\$%&'()*+,./0123456789;,<=>?@ABCDEFGHIJKLM NOP
QRSTUVWXYZ[]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMCenturyOldK - Italic

!#\$%&'() *+./0123456789;:<=>?@ABCDEFGHIJKLMNP
QRSTUVWXYZ[\]^_`abcdefghijklmnpqrstuvwxyz{|}~

MMCenturyOldO - Italic

!"#\$%&'() *+.,/0123456789:;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ\|^_`abcdefghijklmnopqrstuvwxyz{|\}~

MMCenturyOldGreek

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩαβγδεεξηθθικλμν
ξοπωρρστυφφχψω

MMGreek

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩαβγδεζηθικλμνξ
οπωρστυφχψω

MMGreek Italic

*ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩαβγδεεζηθικλμ
νξοπωρρστυφφχψω*

MMEtc

MMNegate

MMRelation

MMTextbook

!"#\$%&'()*+,.0123456789;<=>?@ABCDEFGHIJKLMN
OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMTimes

!"#\$%&'()*+,.0123456789;<=>?@ABCDEFGHIJKLMNP
QRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMTimes Italic

!"#\$%&'()*+,.0123456789:;<=>?@ABCDEFGHIJKLMNPQ
RSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMa Century

!#\$%&'()*+,.0123456789:<=>?@ABCDEFGHIJKLM
NOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}{~

MMA Century Italic

!#\$%&'() *+ ,./0123456789;:<=>?@ABCDEFGHIJKLM
NOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
}`

MMA CenturyB Italic

!"#\$%&'() *+ ,./0123456789;:<=>?@ABCDEFGHIJKLM
NOPQRSTUVWXYZ[\]^_ `abcdefghijklmnopqrstuvwxyz{|}~

MMa CenturyS

!"#\$%&'()*+,.0123456789;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^`abcdefghijklmnopqrstuvwxyz

tuvwxyz{|}~

MMA CenturySS

!#\$%&'()*+,.0123456789;<=>?@ABCDEFGHIJK
LMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMa TextBook Bold Italic

!"#\$%&'()*+,.!0!123456789:;<=>?@ABCDEFGHIJKLM
NOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

MMa Etc

MMa Extra

MMa Greek

ΑΒΓΔΕΖΗΘΙΚΛΑΜΝΕΟΠΡΣΤΥΦΧΨΩαβγδεεζηθθικλμνξ
οπωρδστυφφχψω

MMa GreekB Italic

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΓΦΧΨΩαβγδεεζηθδικλμνξοπωρδστνφφχψω

MMa Negate

MMa Relation

MMa Fermat

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 0 ! @ # \$ % + =

MMA Fermat Bold

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 0 ! @ # \$ % + =

MMa Fraktur

MMA Fraktur Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz 1234567890 !@#\$%+=

MMa Gauss

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 0 ! @ # \$ % + =

MMa Pascal

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z 1 2 3 4 5 6 7 8 9 0 ! @ # \$ % + =

4. TeX codes supported by MathMagic

MathMagic supports these TeX codes when it imports and exports equation as a TeX format.

\above	\abovewithdelims	\blacktriangleright	\bordermatrix
\acute	\acute	\bot	\bowtie
\aleph	\Alpha	\boxminus	\boxdot
\alpha	\amalg	\boxtimes	\boxplus
\And	\angle	\bprime	\prime
\approx	\approxeq	\braceleftbt	\bracelefttex
\arrowhorizex	\arrowvertex	\braceleftmid	\bracelefttp
\ast	\asymp	\bracerightbt	\bracerighttex
\atop	\atopwithdelims	\bracerightmid	\bracerighttp
\backepsilon	\backsim	\brack	\bracketleftbt
\backsimeq	\backslash	\bracketlefttex	\bracketlefttp
\backtriangle	\bar	\bracketrightbt	\bracketrighttex
\bar	\barwedge	\bracketrighttp	\breve
\Bbbk	\because	\breve	\buildrel
\Beta	\beta	\bullet	\Bumpeq
\beth	\between	\bumpeq	\Cap
\bf	\big	\cap	\cases
\bigcap	\bigcap	\cdot	\centerdot
\bigcirc	\bigcup	\check	\check
\bigcup	\Bigg	\Chi	\chi
\bigg	\Biggl	\choose	\circ
\biggl	\Biggm	\circeq	\circlearrowleft
\biggm	\Biggr	\circlearrowright	\circledast
\biggr	\Bigl	\circledcirc	\circledash
\bigl	\Bigr	\circledS	\clubsuit
\bigm	\bigodot	\complement	\cong
\bigodot	\bigoplus	\coprod	\coprod
\bigoplus	\bigotimes	\cr	\Cup
\bigotimes	\Bigr	\cup	\curlyeqprec
\bigr	\bigsqcup	\curlyeqsucc	\curlyvee
\bigsqcup	\bigstar	\curlywedge	\curvearrowleft
\bigtriangledown	\bigtriangleup	\curvearrowright	\dag
\biguplus	\biguplus	\dagger	\daleth
\bigvee	\bigvee	\dashv	\binom
\bigwedge	\bigwedge	\ddag	\ddagger
\binom	\blacklozenge	\ddot	\ddot
\blacksquare	\blacktriangle	\ddot	\Delta
\blacktriangledown	\blacktriangleleft	\def	

\delta	\dfrac	\Im	\imath
\diag	\diagdown	\in	\infty
\diagup	\Diamond	\int	\int
\diamond	\diamondsuit	\integralbt	\integralex
\digamma	\displaylines	\integraltp	\intercal
\displaystyle	\div	\Iota	\iota
\divideontimes	\dot	\it	\jmath
\dot	\doteq	\Join	\Kappa
\doteqdot	\dotplus	\kappa	\Lambda
\doublebarwedge	\doubleprime	\lamda	\langle
\dover	\Downarrow	\langl	\lceil
\downarrow	\downarrowhead	\lbrace	\lceil
\downdownarrows	\downharpoonleft	\lbracket	\lceil
\downharpoonright	\dvert	\lceil	\leadsto
\ell	\emptyset	\left	\Leftarrow
\Epsilon	\epsilon	\leftarrow	\leftarrowhead
\eqalign	\eqalignno	\leftarrowtail	\leftharpoondown
\eqbase	\eqbottom	\leftharpoonup	\leftleftarrows
\eqcenter	\eqcirc	\Leftrightarrow	\leftrightarrow
\eqleft	\eqright	\leftrightarrows	\leftrightharpoons
\eqslantgtr	\eqslantless	\leftrightsquigarrow	\leftthreetimes
\eqtop	\equiv	\leq	\eqalignno
\Eta	\eta	\leqq	\eqslant
\eth	\exists	\lessapprox	\lessdot
\fallingdotseq	\Finv	\lesseqgtr	\lesseqgtr
\flat	\font	\lessgtr	\lessim
\forall	\frac	\lfloor	\lfloor
\from	\frown	\lhd	\limits
\fullstyle	\Game	\ll	\Leftarrow
\Gamma	\gamma	\lll	\lnapprox
\gather	\gdef	\lneq	\lneqq
\geq	\geqq	\lnsim	\longleftarrow
\geqlant	\gg	\longleftrightarrow	\longrightarrow
\ggg	\gimel	\looparrowleft	\looparrowright
\gnapprox	\gneq	\lozenge	\lparen
\gneqq	\gnsim	\lparen	\Lsh
\grave	\grave	\ltimes	\lvertneqq
\gtapprox	\gtrdot	\mapsto	\mathbin
\gtreqless	\gtreqless	\mathclose	\mathop
\gtrless	\gtrsim	\mathopen	\mathord
\gvertneqq	\halign	\mathpunct	\mathrel
\hat	\hat	\matrix	\measuredangle
\hbar	\heartsuit	\medspace	\mo
\hfill	\hookleftarrow	\mid	\mid
\hookrightarrow	\hslash	\midbar	\models
\iiint	\iiint	\mp	\Mu
\iiint	\iiint	\mu	\multimap

\natural	\ncong	\parenleftex	\parenlefttp
\nearrow	\neg	\parenrightbt	\parenrightex
\neq	\nexists	\parenrighttp	\partial
\ngeq	\ngeqq	\perp	\Phi
\ngeqslant	\ngtr	\phi	\Pi
\ni	\nLeftarrow	\pi	\pitchfork
\nLeftrightarrow	\nleftrightarrow	\pm	\pmatrix
\nleq	\nleqq	\prec	\precapprox
\nleqslant	\nless	\preccurlyeq	\preceq
\nmid	\noalign	\precapprox	\precneqq
\nolimits	\not	\precsim	\precsim
\notin	\nparallel	\prime	\prime
\nprec	\npreceq	\prod	\prod
\nRightarrow	\nrightarrow	\proto	\Psi
\nshortmid	\nshortparallel	\psi	\quad
\nsim	\nsubseteqq	\quad	\rangle
\nsubseteqq	\nsucc	\rangleangle	\rbrace
\nsucceq	\nsupseteq	\rbrace	\rbracket
\nsupseteqq	\ntriangleleft	\rbracket	\rceil
\ntrianglelefteq	\ntriangleright	\rceil	\Re
\ntrianglerighteq	\Nu	\rfloor	\rfloor
\nu	\nVdash	\rhd	\Rho
\nVdash	\nvDash	\rho	\right
\nvdash	\nwarrow	\rightarrow	\rightarrow
\odot	\of	\rightarrowtail	\rightarrowtail
\oiint	\oiint	\rightharpoondown	\rightharpoonup
\oint	\oint	\rightleftarrows	\rightleftharpoons
\Omega	\omega	\rightthreetimes	\risingdotseq
\Omicron	\omicron	\rm	\root
\ominus	\operatorname{}	\rparen	\rparen
\operatorname{withlimits}	\oplus	\rightarrow	\Rsh
\oslash	\otimes	\rtimes	\S
\over	\overbrace	\sb	\scriptarrowhorizex
\overbrace	\overbracebt	\scriptarrowvertex	\scriptdownarrowhead
\overbraceex	\overbracemid	\scriptleftarrowhead	\scriptrightarrowhead
\overbracetp	\overbracket	\scriptscriptstyle	\scriptstyle
\overbracket	\overbracketbt	\scriptsymbolstyle	\scriptuparrowhead
\overbracketex	\overbrackettp	\shortparallel	\Sigma
\overreq	\overleftarrow	\sigma	\sim
\overleftrightarrow	\overline	\simeq	\size
\overparen	\overparen	\skew	\slash
\overparenbt	\overparenex	\smallfrown	\smallint
\overparentp	\overrightarrow	\smallsetminus	\smallsmile
\oversetbrace	\overwithdelims	\smile	\sp
\P	\parallel	\space	\spadesuit
\parallel	\parenleftbt	\sphericalangle	\sqcap

\sqcup	\sqrt	\updownarrow	\upharpoonleft
\sqsubset	\sqsubseteq	\upharpoonright	\uplus
\sqsupset	\sqsupseteq	\Upsilon	\upsilon
\square	\star	\upuparrows	\varepsilon
\struct	\Subset	\varkappa	\varnothing
\subset	\subseteq	\varphi	\varpi
\subsetneqq	\subsetneq	\varpropto	\varrho
\subsetneqq	\succ	\varsigma	\varsubsetneq
\succapprox	\succcurlyeq	\varsubsetneqq	\varsupsetneq
\succeq	\succapprox	\varsupsetneqq	\vartheta
\succcneqq	\succnsim	\vartriangle	\vartriangleleft
\succsim	\sum	\vartriangleright	\vdash
\sum	\Supset	\vDash	\dashv
\upset	\supseteq	\vec	\vec{v}
\upseteqq	\supsetneq	\vee	\veebar
\upsetneqq	\surd	\Vert	\vert
\swarrow	\symbolstyle	\Vdash	\wedge
\Tau	\tau	\xint	\ointint
\tbinom	\tdiag	\xoint	\oint
\text	\textstyle	\Zeta	\zeta
\tfrac	\therefore		
\Theta	\theta		
\thickapprox	\thickfrac		
\thicksim	\thickspace		
\thinspace	\tilde		
\tilde	\times		
\to	\top		
\over	\triangle		
\triangledown	\triangleleft		
\trianglelefteq	\triangleq		
\triangleright	\trianglerighteq		
\triangleup	\prime		
\twoheadleftarrow	\twoheadrightarrow		
\underbrace	\underbrace		
\underbracebt	\underbraceex		
\underbracemid	\underbracetp		
\underbracket	\underbracket		
\underbracketbt	\underbraketex		
\underbrackettp	\undereq		
\underleftarrow	\underleftrightarrow		
\underline	\underparen		
\underparen	\underparenbt		
\underparenex	\underparentp		
\underrightarrow	\undersetbrace		
\unlhd	\unrhd		
\Uparrow	\uparrow		
\uparrowhead	\Updownarrow		

4. TeX codes supported by MathMagic

MathMagic supports these TeX codes when it imports and exports equation as a TeX format.

her

\aleph	\chi	\Downarrow	\gtrdot
\Alpha	\circ	\downarrow	\gtreqless
\alpha	\circlearrowleft	\downdownarrows	\gtreqqless
\angle	\circlearrowright	\downharpoonleft	\gtrless
\approx	\circledast	\downharpoonright	\gtrsim
\approxeq	\circledcirc	\emptyset	\gvertneqq
\ast	\circleddash	\Epsilon	\hbar
\asmp	\circledS	\epsilon	\heartsuit
\backcong	\clubsuit	\eqcirc	\hexagon
\backsimeq	\complement	\eqslantgr	\hexagon
\barwedge	\cong	\eqslantless	\hslash
\Bbbk	\Cup	\equiv	\Im
\because	\cup	\Eta	\in
\Beta	\curlyeqprec	\eta	\infty
\beta	\curlyeqsucc	\eth	\int
\beth	\curlyvee	\exists	\intercal
\between	\curlywedge	\fallingdotseq	\Iota
\bigcirc	\curvearrowleft	\Finv	\iota
\bighat	\curvearrowright	\flat	\jmath
\bigstar	\dag	\forall	\Join
\bigtriangledown	\daleth	\frown	\Kappa
\bigtriangleup	\dashv	\Game	\kappa
\blacklozenge	\ddag	\Gamma	\Lambda
\blacksquare	\ddots	\gamma	\lambda
\blacksquare	\Delta	\ge	\langle
\bot	\delta	\geneuro	\largecircle
\bowtie	\Diamond	\genuronarrow	\largediamond
\boxdot	\diamond	\genuronarrow	\large square
\boxminus	\diamondsuit	\geq	\largetriangleup
\boxplus	\div	\geqq	\lcurvearrowse
\boxtimes	\divideontimes	\geqlant	\le
\bullet	\doteq	\gg	\leadsto
\Bumpeq	\doteqdot	\ggg	\Leftarrow
\bumpEq	\dotplus	\gimel	\leftarrow
\Cap	\dotsb	\gnapprox	\leftarrowtail
\cap	\dotsc	\gneq	\leftharpoondown
\cdot	\dotsi	\gneqq	\leftharpoonup
\cdots	\dotsm	\gnsim	\leftleftarrows
\Chi	\doubleprime	\gtrapprox	\Leftrightarrow

\leftrightarrow	\Mu	\ntriangleright	\Re
\leftrightsquigarrow	\mu	\ntrianglerighteq	\rhd
\leftrightharpoons	\multimap	\Nu	\Rho
\leftarrowharpoon	\nabla	\nu	\rho
\leftarrowthreetimes	\natural	\updownline	\rightangle
\leq	\ncong	\nVdash	\Rightarrow
\leqq	\ne	\nVdash	\rightarrow
\leqslant	\nearrow	\nvDash	\rightarrowtail
\lessapprox	\neg	\nvDash	\rightharpoondown
\lessdot	\neleft	\nwarrow	\rightharpoonup
\lesseqgtr	\neswarrow	\nwsearrow	\rightleftarrows
\lesseqgtr	\nexists	\odot	\rightleftharpoons
\lessgtr	\ngeq	\Omega	\rightrightarrows
\lessim	\ngeqq	\omega	\rightsquigarrow
\lhd	\ngeqlant	\Omicron	\rightthreetimes
\ll	\ngtr	\omicron	\risingdotseq
\Lleftarrow	\ni	\ominus	\Rrightarrow
\lll	\nLeftarrow	\oplus	\Rsh
\lnapprox	\nleftarrow	\oslash	\rtimes
\lneg	\nLeftrightarrow	\otimes	\S
\lneqq	\nleftrightarrow	\P	\searrow
\lnsim	\nleq	\parallel	\sharp
\longleftarrow	\nleqq	\partial	\shortmid
\Longleftarrow	\nleqslant	\pentagon	\shortparallel
\Longleftrightarrow	\nless	\pentagon	\Sigma
\longleftrightarrow	\nmid	\perp	\sigma
\longrightarrow	\notequiv	\Phi	\sim
\Longrightarrow	\notequiv	\phi	\simeq
\looparrowleft	\notin	\Pi	\smallfrown
\looparrowright	\notni	\pi	\smallsmile
\lozenge	\notsmallin	\pm	\smile
\Lsh	\nparallel	\pounds	\spadesuit
\ltimes	\nprec	\prec	\sphericalangle
\lvertneqq	\npreceq	\preccurlyeq	\sqcap
\mapsto	\nrightarrow	\preccurlyeq	\sqcup
\mbox{\textquotedblleft}	\nrightarrow	\preccurlyeq	\sqsubset
\mbox{\textquotedblright}	\nshortmid	\preccurlyeq	\sqsubseteq
\mbox{\textquoteright}	\nshortparallel	\preccurlyeq	\sqsupset
\mbox{\textquoteright}	\nsim	\precsim	\sqsupseteq
\measuredangle	\nsubseteqq	\precsim	\square
\medcircle	\nsubseteqqq	\prime	\square
\medtriangleleft	\nsucc	\propto	\squaredots
\medtriangleright	\nsuccq	\Psi	\star
\mho	\nsupseteqq	\psi	\Subset
\mid	\nsupseteqq	\rangle	\subset
\models	\ntriangleleft	\curvearrowone	\subseteqq
\mp	\ntrianglelefteq	\curvearrowose	\subseteqqq

\subsetneq	\upuparrows
\subsetneqq	\upVdash
\succ	\varangle
\succapprox	\varepsilon
\succcurlyeq	\varnothing
\succeq	\varparallel
\succnapprox	\varphi
\succneq	\varpi
\succnsim	\varsigma
\succsim	\varsubsetneq
\sum	\varsubsetneqq
\Supset	\varsubsetneqq
\supset	\varsupsetneq
\supseteq	\varsupsetneqq
\supseteqq	\varsupsetneqq
\supsetneq	\vartheta
\supsetneqq	\vartriangle
\surd	\Vdash
\swarrow	\vDash
\Tau	\vdash
\tau	\dots
\textasciitilde	\vee
\therefore	\veebar
\Theta	\Vert
\theta	\vert
\times	\wedge
\top	\wp
\triangle	\wr
\triangledown	\Xi
\triangleleft	\xi
\triangleq	\Zeta
\triangleright	\zeta
\prime	
\twoheadleftarrow	
\twoheadrightarrow	
\udots	
\unlh	
\unrh	
\Uparrow	
\uparrow	
\Updownarrow	
\updownarrow	
\upharpoonleft	
\upharpoonright	
\uplus	
\Upsilon	
\upsilon	

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