

Chapter 4

Working with Microsoft Word

This chapter will discuss the following topics:

- [Pasting Into MS Word](#)
- [Re-Editing Expressions](#)
- [Vertical Spacing \(“in-line” expressions\)](#)
- [PostScript v. PICT v. Bitmap](#)
- [Setting MathEQ Preferences for MS Word](#)
- [Converting MathType and MS Equation Editor Objects to MathEQ](#)
- [Transferring MS Word files Between MacOS and Windows](#)

Related Topics:

- [Using FontBlocks](#)

Multimedia Tutorials :

[Simple Expression](#)

[Re-Editing Expressions](#)

[Changing MS Word Preferences](#)

[Converting MathType/Equation Editor](#)

Output

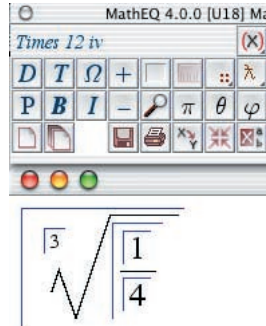
Q

Module Number

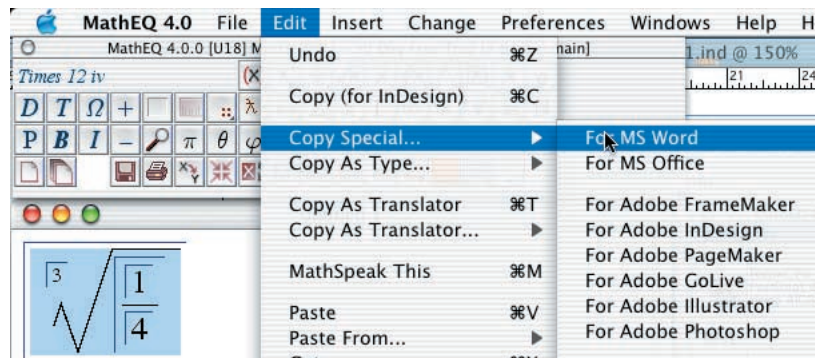
Module Title

As a simple first example, we shall demonstrate how to insert the simple expression $\sqrt[3]{\frac{1}{4}}$ into a MS Word document.

Step 1 In MathEQ, create the expression $\sqrt[3]{\frac{1}{4}}$



Step 2 Highlight the expression, and select the menu:
Edit → Copy Special... → For MS Word



Step 3 Now change active programs to work inside MS Word. In your MS Word document, click the cursor to where you want the MathEQ expression to be inserted. Then select the menu:



Notice that the expression was “in-line vertically centered”, where the division bar lined up exactly with the middle of the text line. This is referred to as “in-line vertically centered on the Math Axis”. You may change this option to vertically adjust by other specifications.

Getting Technical

When we Copy/Paste from MathEQ into MS Word, we are copying not just the picture image, but other data as well, depending upon the Preference settings. In the “Default” mode, the total amount of data copied to the Clipboard is:

Macintosh Users :

- PICT (vector-based) Preview Image
Only shown on the screen, not printed to PostScript printer
- Embedded PostScript
Used for beautiful printing to PostScript printer (not seen in Preview)
- Embedded Fonts
To make sure MS Word and your PostScript printer have the fonts required
- RTF (Rich Text Format)
This is wrapped around the graphic object - required for in-line vertical centering

Windows Users :

- WMF (Windows Meta File)
Vector-based Graphics file format
- OLE (Object Linking and Embedding)
This is for “in-document” editing. You may re-edit this expression in directly in Word.
- RTF (Rich Text Format)
This is wrapped around this graphic object - required for in-line vertical centering

Module 2.2

Re-Editing Expressions

Macintosh Users

To Re-Edit a MathEQ expression that is inside of MS Word, simply highlight the expression, and Copy/Paste it back into MathEQ. The “secret encoding” - special to MathEQ objects - will be found, and will convert the image expression back to an editable object inside of MathEQ. When you are done with your changes to this expression, then simply highlight the expression, and Copy/Paste it back into MS Word.

Windows Users

To Re-Edit a MathEQ expression that is inside of MS Word, simply double-click on the expression. By double-clicking on the expression, the MathEQ OLE functionality will be engaged. You will see the menus of MS Word change to the menus of MathEQ - including the Palette - so you may edit the MathEQ expression while still being “inside of” MS Word entirely.

When you are done with your editing/modifications, simply click outside of the MathEQ expression - somewhere inside of the MS Word document, of course - and the MathEQ expression will be re-rendered inside of MS Word, and return to being a high resolution graphic inside of MS Word.

Module 4.3 Vertical Alignment

When working with MS Word, one might be typing in a sentence (just like this one), and wish to insert a MathEQ expression in the middle of the sentence. There are many vertical alignments possible; here are two such examples:

Example 1	Example 2
A sentence that uses “Vertical Alignment on Bottom” to place the expression $\sqrt[3]{\frac{1}{4}}$ into this sentence.	Another sentence that uses “Vertical Alignment on Math Axis” to place $\sqrt[3]{\frac{1}{4}}$ into the sentence.

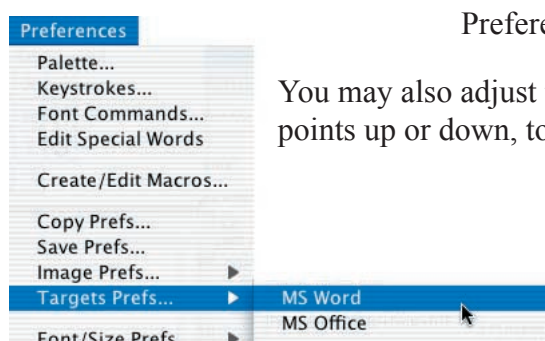
Notice that Example 1 does not look as good as Example 2 (although, for some applications, some users may wish to have #1 instead - that option is provided for as well). Notice that in Example 2, the fraction bar lines up exactly in the middle of the text line. The fraction bar, in this case, is located at the “Math Axis”, a magical place determined from a collection of factors that “looks like the vertical middle” of the expression.

Here is an example of when the Math Axis does not match the Vertical Center.

Example 3	Example 4
Here is an example of vertical centering on Math Axis: $\sqrt[4]{\frac{5}{(x-3)2}}$	The same example, this time centered on Vertical Axis: $\sqrt[4]{\frac{5}{(x-3)2}}$

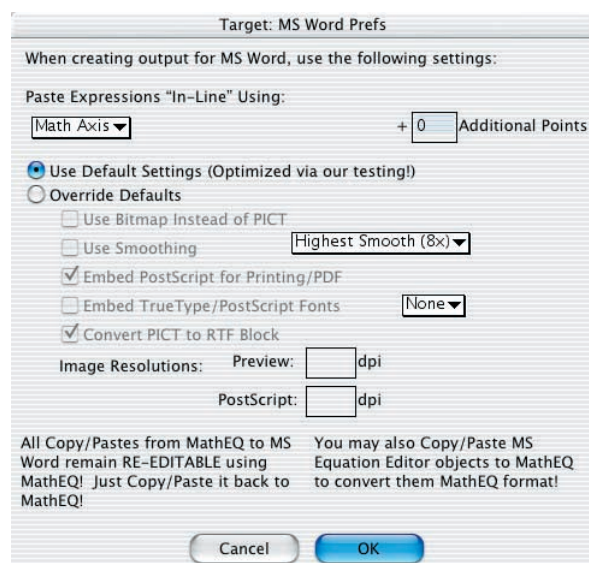
In Example 3, the Math Axis is computed based upon the “major fraction”, in this case, the top fraction bar. Which one is “correct” is a matter of taste: some may view the Math Axis centering to be more aesthetically pleasing, while others may prefer the vertical axis centering in this example.

You may, of course, change which centering axis is being used for working with MS Word, via the menu:



Preferences → Target Apps → MS Word

You may also adjust the amount of vertical centering with additional points up or down, to fine-tune the global settings.



Of course, when inside MS Word, you may select the expression, and choose

Format → Fonts → Character Spacing and change the Position menu to “Lowered”, and change the numerical value manually.

All Copy/Pastes from MathEQ to MS Word remain RE-EDITABLE using MathEQ! Just Copy/Paste it back to MathEQ!

You may also Copy/Paste MS Equation Editor objects to MathEQ to convert them MathEQ format!

Cancel OK

Module 4.4

Setting Up MathEQ Preferences for MS Word

**This Module Applies only to Macintosh Users.*

You may change the Default settings for MS Word specific to your tastes. The various options are explained here:

- Use Bitmap Instead of PICT

This refers to the Preview picture if you are using PostScript printing; if printing to an inkjet printer, this is the printing image itself. By default, the Preview image is drawn as a PICT in native QuickDraw drawing commands, which is similar to a “vector-based” graphic. Due to the limitation of PICT/QuickDraw drawing, such images tend to not look as good as one might hope. By contrast, Bitmap images look great, because they are anti-aliased. Unfortunately, Bitmap images do not “stretch” well, so if you plan to insert a MathEQ expression into MS Word, and then stretch it manually (dragging one corner to make the image larger), then Bitmaps will not look so good (some users refer to them as looking “out of focus”).

If you are printing to an inkjet printer, then Bitmap images, at a high resolution, tend to look much better than their PICT counterparts. Experiment for yourself to determine which you prefer.

- Use Smoothing

This is only applicable when making Bitmaps. For smaller expressions, the maximum “8 times” oversampling gives the best image. But due to limitations with Macintosh drawing, such images cannot be of infinite size. So if you are working with larger expressions, you may need to reduce this Smoothness setting. An error will tell you if you are too big for the Macintosh drawing system, and/or you will see the right side (or bottom portion) of your image turn solid black when you are exceeding the Macintosh’s drawing restrictions.

- Embed PostScript for Printing/PDF

If you are printing to a PostScript printer (most Laser printers are PostScript-capable), then you will most like wish to use pure PostScript to render your MathEQ expressions. PostScript rendering is far superior to PICT and/or Bitmap. On the Macintosh, there are two levels to each picture: a Preview level (the PICT/Bitmap that you see on the screen), and the PostScript level (PostScript drawing commands hidden “under the picture”).

If you are printing to an inkjet printer only, then having PostScript is not used by these printers.

- Embed TrueType/PostScript Fonts

MS Word for OSX is notoriously bad at helping embedded PostScript graphics with their required fonts. (In fact, Microsoft recommends to its users not to use any non-Microsoft images inside of MS Word!) If you are doing PostScript printing, then you will need to get the fonts you are using into the MS Word document or you PostScript printer is some manner. There are many different strategies for doing this with MathEQ - the easiest (although most wasteful of diskspace) is to turn this option on, so that each MathEQ expression you create has the required PostScript and converted TrueType fonts embedded into the MathEQ expression itself. This method always

works, and if you only have a few MathEQ expressions in your MS Word document, it is probably the easiest. If you have many MathEQ expressions, however, you may wish to use a FontBlock in your MS Word document, or have MathEQ send your PS/TT fonts to your PostScript printer, and store these fonts into the Printer memory. See FontsBlocks for more information.

- Convert PICT to RTF Block

This option is specific to MS Word. RTF (Rich Text Format) is a Microsoft-designed format for working with text documents. MS Word uses RTF to accomplish the vertical centering of in-line expressions. If you want your MathEQ expressions to vertically center themselves, you will need to use this option. It may be the case that some applications and/or documents work better with RTF turned off, which is why we have provided this option.

- Preview Resolution

This resolution, measured in dpi (dots per inch), describes the resolution of the Preview portion of the PICT to be inserted into MS Word. The higher the resolution, the “finer” or more detailed the final preview expression will be. The screen resolution of the Macintosh is 72 dpi, so when you Paste in a 576 dpi PICT, for example, MS Word will scale the PICT down to 72dpi, which provides for an “anti-aliasing” effect. The default setting is 1172 dpi for the Preview resolution, which is 16 times the inherent screen resolution. This high value allows some of the interplay between PICT and PostScript sizing to work best with MS Word.

- PostScript Resolution

Most PostScript printers have a “square resolution” of 300 dpi (dots per inch), although many newer printers have 600 dpi and 1200 dpi compatibility. If you send a 1200 dpi PostScript image to a 300 dpi printer, the printer will “scale” the picture down to the resolution that the printer needs, and thus provides an “anti-aliasing” effect to make the image even more smooth and finer than just regular PostScript at a higher resolution. The default setting is 1200 dpi. You may experiment with this setting to find a value you prefer most.

Module 4.5

Converting MathType Expressions

MathEQ has a MathType 3 and MathType 4 converter built-in. MS Equation Editor is based upon MathType 3 on the Macintosh, and MathType 4 on Windows (as of this writing).

To convert an existing MathType expression to MathEQ, simply Copy the MathType expression, and Paste into MathEQ. MathEQ will detect that this expression was created in MathType, and MathEQ will warn you that it is going to convert this expression.



The conversion process is perfect for almost all MathType expressions; however, larger and more complex MathType expressions can sometimes have difficulty in the conversion process, in which case it is recommended that you convert the MathType expression to MathEQ piecemeal - smaller portions of the MathType expression at a time.