

MS Word 2007 Equation Writer Tutorial

By

Mervin E. Newton
Thiel College

This tutorial is intended to give the reader an introduction to using the equation writing tools in MS Word 2007. It is not intended as a complete set of instructions for that software, but a person who has mastered the basics using this tutorial, should be able to figure out some of the more complex applications with the assistance of the built in "Help" menus.

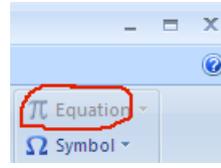
To start entering an equation into a document, place the cursor where the equation should

go then click on "Insert" near the upper left corner of the screen:



. Now

click on " π Equation" in the upper right corner of the screen:



. A box that says

"Type equation here" will appear at the location of the cursor:



. You can

now start typing the equation. For example, let us create the inequality $x \leq 2\pi$. Click on

"Insert" then on " π Equation", then type "x". We see on the tool bar a group of math symbols



that include the less than or equal sign:

. Click on

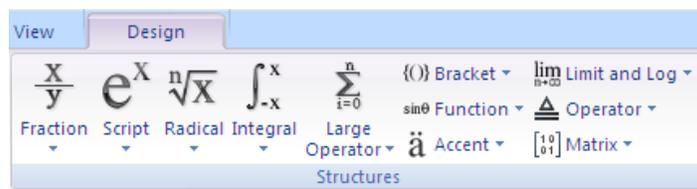
" \leq " and it will be inserted into the inequality. Now type "2". The tool bar has 7 rows of basic math symbols, but it only shows 2 rows at a time. Notice that there are three scroll buttons at the right end of the that tool bar. The top and middle buttons will scroll up and down respectively through the rows, and the bottom one will display all 70 symbols. Scroll down or display the entire array of symbols and click on " π ".

HINT: If the equation is to be followed by some punctuation, such as a period because it is at the end of a sentence, make that punctuation part of the equation.

If the cursor is placed in a line with text, the editor will assume the equation is intended to be on that line. If the equation is intended to be displayed, click on the scroll down button on at the right of the equation box then click on "Change to Display". If the cursor is at the beginning of a blank line, the editor assumes the equation is intended to be a display. If it is intended to be in the line of text, click on the scroll down button and then on "Change to Inline". To continue with normal text after the equation has been completed, click anywhere outside of the equation box.

To edit an existing equation, click anywhere on the equation. To get the equation tools back, click on "Equation Tools", which has appeared about 2/3rds of the way across the top of the screen. Now make changes inside the equation box the same as anywhere else in the document.

Now let us try something a bit more complicated, say $y = ax^3 + bx^2 + cx + d$. Get into the equation editor as before and type “y=a”. Notice that one need not type the spaces, the equation editor puts them in. Now notice the box of design tools in the equation editor tool bar:



Click on the scroll down button under the big e^x to see a selection of subscript and superscript templates. Click on the choice \square^\square . Now click in the lower left box, where the base goes, and type the x . Now press the right arrow key to move the cursor to the upper right box, where the exponent goes, (or click in the exponent box), and type the 3. Press the right key again to get to the right of the exponent structure and continue typing “+c”. Scroll down the list of script templates again and notice that there are a few common forms, one of which is x^2 . Click that to insert it into the equation. Now finish typing the rest of the equation.

Now let us try $(x + y)^2 \neq x^2 + y^2$. Get into the equation writer and choose the exponent template as before. Now type “(x+y)” in the base box using the parentheses on the keyboard. Now Press right arrow to get into the exponent box and type “2”, then press right arrow. Finally choose \neq from the list of math symbols, then finish the right side of the inequality using the tools discussed earlier. Using the parentheses from the keyboard is fine for a simple expression such as the one we just completed, but not for more complicated expressions.

Next let us try $y = a\left(\frac{x}{b} + c\right)$. Enter the equation writer and type “y=a”. The parentheses from the keyboard will not do in this case because they will not expand to the size of the fraction. Click on $\{\}$ Brackets on the Design tool bar. A group of templates for different grouping symbols will become available. In this case we want the first one: $\left(\square\right)$. Now click in the box within the parentheses, then on the Fraction icon on the Design tool bar and again

choose the first one: $\frac{\square}{\square}$. Click in the numerator box and type “x”, then press the down arrow key or click in the denominator box and type b. Finally, press the right arrow key and type “+c”. If you display the equation it will look as seen below:

$$y = a\left(\frac{x}{b} + c\right).$$

Notice that the numerator and denominator are now in the same font size as the rest of the text.

Now let us try

$$\bar{x} = \frac{1}{n} \sum_{j=1}^n x_j.$$

Enter the equation writer as before, but make sure it is set to display the equation. Click on the “Accent” icon on the tool bar and choose the template with the over bar. Click in the box and type the “x”. Now press the right arrow key and type “=”. Next choose the same fraction template that we used in the previous example, type “1” in the numerator and “n” in the denominator, and then press

the right arrow key again. Now click on the Σ icon in the tool bar and choose the appropriate template. Type "j=1" in the lower limit box and "n" in the upper limit box. In the summand box click on the script icon and choose the subscript icon. Type "x" in the base box and "j" in the subscript box. Your equation should now look like the one above. Now try setting this equation to "Inline" and see what happens. Like so many other Microsoft products, it thinks it knows better than the user what the user wants. There is usually a way around such insolence, but your author has not yet been able to find a way around it in this case.

All of the other tools in the Design tool bar work in very much the same way as those demonstrated above. The ones that do require a bit of creativity are the matrix templates for a matrices bigger than 3 x 3. Consider, for example, the augmented matrix for the following system of equations:

$$\begin{aligned} 3x + 4y - 2z &= 15 \\ 2x - 3y - 8z &= 11 \\ 5x - 2y - 3z &= 16 \end{aligned}$$

Get into the equation writer and pull down the Brackets templates. Choose $\left[\begin{array}{cc|c} \end{array} \right]$. Click in the box, pull down the matrix templates and choose the one with three rows and 2 columns. Click in each of the boxes and fill in the first two columns of the matrix. Next use the right arrow key to set the cursor just to the right of the second column, pull down the Brackets templates again and select $\left[\begin{array}{c|c} \end{array} \right]$. Click in the box, pull down the matrix templates, select the one with three rows and one column and fill in the third column of the matrix. For better looking spacing, put a blank space after each of the numbers in the third column. Now use the right arrow key to place the cursor just to the right of the vertical line, pull down the Brackets templates and select $\left[\begin{array}{ccc|c} \end{array} \right]$. Click in the box, pull down the matrix templates, choose the one with three rows and one column and fill in the last column of the matrix. The result should be as shown below:

$$\left[\begin{array}{ccc|c} 3 & 4 & -2 & 15 \\ 2 & -3 & -8 & 11 \\ 5 & -2 & -3 & 16 \end{array} \right].$$

As a final example suppose we need a 6 x 6 matrix. Enter the equation writer, pull down the matrix templates and choose the 2 x 2 matrix with brackets. In each of the original 4 squared, choose the 3 x 3 matrix template. The result will be a 6 x 6 template ready for the 36 cells to be filled in.

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