

Using Scientific WorkPlace: The Basics

Scientific WorkPlace is a powerful program that makes writing, sharing, and doing mathematics easier than ever. You can enter equations, create tables and matrices, import graphics, and graph in two and three dimensions, all within your documents. The integrated computer algebra system provides the computational power you need to solve the most complex mathematical problems. With **Scientific WorkPlace**, you can choose how to publish your documents. You can print directly from the **File** menu, compile and print using LaTeX, or publish on the web. In addition, **Scientific WorkPlace** makes it easy to share your documents with colleagues. You can save your documents as portable LaTeX or export them as PDF, RTF, or HTML.

To get you started, here are instructions for the most basic tasks in **Scientific WorkPlace**. You can find much more information in the online Help system, on our website, and in the manuals supplied with the program.

Install the program

Installing **Scientific WorkPlace** involves two steps: installing the program files and registering to obtain a license.

Insert the program CD in your CD-ROM drive and follow the instructions that appear on the screen. When the program asks whether you want to register the program, choose Yes to register to obtain a license via an automated Web service, then follow the instructions on the screen. (You can register at a later time if you prefer.) If you're using a trial version of the program, the license expires in 30 days.

Start a new document

Start the program and read the Welcome document. Then, start a new document:

1. From the **File** menu, choose **New**.
2. In the Shell Directories list, choose **Standard LaTeX**.
3. In the Shell Files list, choose **Blank - Standard LaTeX Article**.
4. Choose **OK**.

Enter text and mathematics

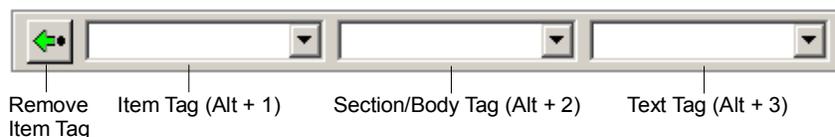
Now you're ready to enter text and mathematics in your document. **Scientific WorkPlace** defaults to text, so to enter text, just start typing.

When you're ready to enter mathematics, toggle from text to mathematics: press Ctrl+M or click . When you're ready to enter text again, press Ctrl+T or click .

Format your text

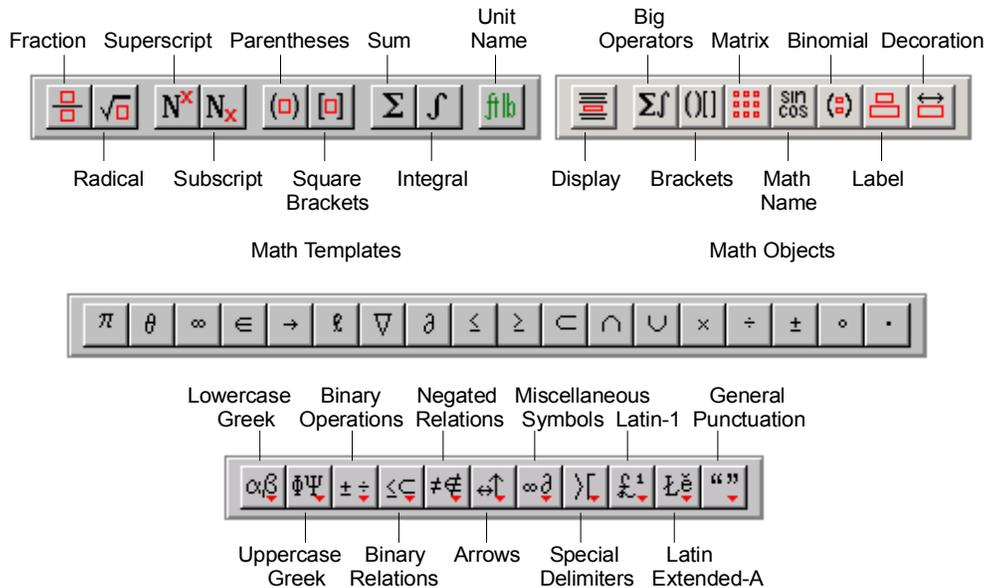
Apply tags to your content to change the screen appearance of your document or format it for printing or exporting when you don't typeset. The typesetting specifications govern the document appearance when you typeset.

- Select an expression and click  to bold the expression or  to italicize it. Additional tags are available from the tag boxes at the bottom of the screen:



Enter mathematics

Four toolbars contain buttons for entering common mathematical symbols and objects using correct mathematical notation:



Display the toolbars:

1. From the **View** menu, choose **Toolbars**.
2. Check the box next to these toolbars: **Math Templates**, **Math Objects**, **Symbol Cache**, and **Symbol Panels**.
3. Choose **OK**.

To enter an operation or symbol, click the button for the object or symbol you want.

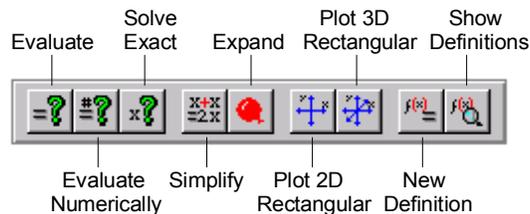
Some buttons, such as those for fractions or subscripts, immediately enter a template for an object in your document. To complete the object, type values into the template.

Other buttons, such as those for brackets, operators, or symbols, open dialogs or panels so you can provide additional information before the program places a template or symbol in your document.

Keyboard shortcuts are available for entering mathematical objects and symbols and also for editing and scrolling. For a complete list, search online **Help** for **Keyboard Shortcuts**.

Compute in your document

The **Compute** menu contains commands for many complex computations that you can perform with MuPAD 2.5, the built-in computer algebra system. Buttons for common computational operations also appear on the Compute toolbar:



Evaluate an expression

You can quickly evaluate the expressions you enter in **Scientific WorkPlace**:

1. Change to mathematics mode (Ctrl+M or ).
2. Enter the expression just as you would normally write mathematics. **Scientific WorkPlace** understands correct mathematical notation so you don't need to use special syntax.
3. With the insertion point to the right of the expression, choose **Compute** and then choose **Evaluate** or **Evaluate Numerically**, or click the corresponding buttons on the Compute toolbar.

Plot an expression

Plotting expressions is similarly fast:

1. Change to mathematics mode (Ctrl+M or ).
2. Enter the expression just as you would normally write mathematics.
3. With the insertion point to the right of the expression, choose **Compute** and then choose **Plot 2D** or **Plot3D**, or click the corresponding buttons on the Compute toolbar.
4. Change the plot properties, such as plot style or range:
 - a. Select the plot.
 - b. Click the blue icon in the lower right corner of the plot.
 - c. Use the tabs in the **Plot Properties** dialog to edit the properties as necessary.You can rotate a 3D plot by double-clicking it and then dragging the cursor over the plot to rotate it.

Work with physical units

In **Scientific WorkPlace** you can enter, convert, and compute with standard physical units.

Enter a physical unit:

1. Start mathematics (Ctrl+M or ).
2. Enter a numeric value.
3. Enter the unit from the keyboard:
 - a. Type **u** to tell the program you want to enter a unit.
 - b. Type the first two letters of the unit name, such as **me** for meters. See a full list of keyboard shortcuts for physical units in the online Help.or enter the unit from the **Unit Name** dialog:
 - a. From the **Insert** menu, choose **Unit Name** or click .
 - b. Select the unit you want and choose **Insert**.

Perform a unit conversion:

1. Start mathematics (Ctrl+M or ).
2. Enter the numeric value and physical unit to be converted.
3. Type =.
4. Type **x** followed by the physical unit to which you want to convert.
5. From the **Compute** menu, choose **Solve** and then choose **Exact**, or click .

Enter constants

You can enter many constants, such as the gravitational constant, from the Fragments toolbar:

1. From the **View** menu, choose **Toolbars**, check the box next to **Fragments**, and choose **OK**.
2. Scroll the list to select and click the constant you want.

Typeset and print

In **Scientific WorkPlace**, you can print with or without typesetting. When you typeset, the program provides the fine formatting characteristic of LaTeX, including the automatic generation of document elements such as section and equation numbers, table of contents, cross-references, and index. When you print without typesetting, the printed document is similar in appearance to what you see on the screen and document elements aren't generated.

Typeset your document:

- From the **Typeset** menu, choose **Typeset Print** or click  on the Typeset toolbar.

Print your document without typesetting it:

- From the **File** menu, choose **Print** or click .

Share your documents

Although **Scientific WorkPlace** documents are saved as .tex files, you can output your documents as HTML or RTF files, as typeset PDF files, or as Portable LaTeX files that can be opened on a wide range of LaTeX installations. The variety of available output formats makes it easier than ever to share your documents across platforms, installations, and systems, on a network or on the Web.

Save your file:

- From the **File** menu, choose **Save** or click  .

Export your document as an HTML file:

1. From the **File** menu, choose **Export Document**.
2. Enter a file name and location and select an HTML format for the document. The program supports MathML for Internet Explorer 5.5 or higher and for Netscape 7, which has direct support for MathML.
3. Choose **Save**.

Create a typeset PDF file:

1. From the **Typeset** menu, choose **Output Choice**, choose **PDF output**, and choose **OK**.
2. From the **Typeset** menu, choose **Print PDF** or click  .
3. Correct the settings in the Print dialog as necessary and choose **OK**.

Access the Web

If you have an Internet connection, you can use **Scientific WorkPlace** as a browser to access information on the Web. If you access an online .tex file created with a MacKichan Software program, **Scientific WorkPlace** opens the file in a new window. If you access a file in a different format, **Scientific WorkPlace** opens the appropriate browser on your computer.

1. From the **File** menu, choose **Open Location**.
2. Enter the URL of the file you want to open and choose **Open**.

Access reference material

If you perform a *complete* installation (instead of a *typical* or *custom* installation) of **Scientific WorkPlace**, reference material for mathematics and the sciences is available online. You can obtain information on how to use specific techniques and formulas and you can see explanations of the mathematics with examples. The mathematics in the materials is "live" so you can paste it into your document and then compute with it.

To access the reference material:

- From the **Help** menu, choose **Reference Library** and then choose the topic you want.

For more information

You can find more detailed instructions for working with **Scientific WorkPlace** in the online Help system, which contains tutorial exercises and extensive information about entering text and mathematics and performing computations. Additional exercises are available in the *Getting Started* manual provided with the program CD and in online Help.

To open the tutorial:

- From the **Help** menu, choose **Contents** and then choose **Learn the Basics**.

To take a fast tour of **Scientific WorkPlace** features:

- From the **Help** menu, choose **Contents** and then choose **Take a Tour**.

If you have questions during your trial of a MacKichan Software product, please email support@mackichan.com or call toll-free 1-877-724-9673.

For more information on pricing, site licenses, or volume discounts, please contact us at info@mackichan.com or call us toll-free at 1-877-724-9673.

Visit our webstore.

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