Northern Virginia Community College
Extended Learning Institute
Mrs. Roberts
Introduction to Scientific Notebook

If you can read this, then you already have correctly installed Scientific Notebook.

Scientific Notebook is a mathematical software package that will allow us to do two major tasks.

First, we can use it as an **equation editor**, that is, we can write mathematical symbols that would be difficult or impossible to insert into an ordinary word processor.

Second, Scientific Notebook can **carry out** many **mathematical operations** for us.

The quizzes in this course will be sent to you by E-mail as Scientific Notebook files. You will take each quiz, on the page sent to you, by using your own copy of Scientific Notebook. Then, you will attach the completed quiz to an E-mail message sent to me at **mroberts@nvcc.edu**. I will correct your quiz and return the corrected version to you.

In the Mini-Lectures for each section of our text, I will introduce relevant parts of Scientific Notebook along with the mathematical concepts and techniques covered in the textbook. In order to learn more about Scientific Notebook, you can always select **Help** on the Scientific Notebook menu bar at the top of the screen. Many of the standard word-processing keyboard commands for cutting and pasting can be used in Scientific Notebook.

Toolbars

You can enter mathematical symbols by using keyboard commands or by selecting icons from various toolbars. To have the toolbars visible, select **View** and then **Toolbars...** from the menu bar at the top of the screen. Then check each menu bar you wish to see. With your mouse, you can drag and move the bars around the screen.

Keyboard Shortcuts

The **keyboard shortcuts** can be found by going to **Help** in the menu bar, then selecting **Search**.

Type in **keyboard shortcuts** and then you can print out the resulting page for future reference.

Equation Editor

In the math toolbar, there is a button with a capital T (in black) or a capital M (in red). This button lets you toggle between text mode and math mode in a given Scientific Notebook (SN) document.

In the middle window at the bottom of the page you can also set the page default mode to "Body Text" or "Body Math". "Body Text" is for pages such as this, where most of the content is text, and a little bit of math is inserted. If, on the other hand, you will be doing a lot of calculation, with a bit of explanatory text, then you can select "Body Math". Also, you can change the setting at any point in a document.

Now, let's use SN as an equation editor. I toggle to math mode and type some expressions.

$1 + 1 = 2$ Note that the expression is in red. That is SN's way of indicating math mode. I simply toggled to math mode and typed symbols from my keyboard. Then, I toggled back to text mode.

$1 + 3 = 10$ No, SN is not broken. I am just showing you that it is possible to enter any sort of nonsense in math mode. You can use SN as a scratch pad. It is a convenient tool to jot down your thoughts and copy your pencil and paper calculations.

What is really convenient about SN is the availability of templates to compose complicated mathematical expressions.

For example, to make a fraction, select the fraction button (two red boxes separated by a horizontal line).

—

By pressing that button, SN automatically switches into math mode. Now we can fill in each box with a number, letter, or more complicated expression. You can use your tab key to move between the boxes to be filled. Below are two examples.

$\frac{2}{3}$

$\frac{a+b}{c+d}$

The parentheses buttons will give various sorts of parentheses and brackets, and these will expand to contain any expressions you type inside.

Calculator

What is the sum of 3 and 9. I realize that you can easily do this arithmetic in your head. The point of doing an easy problem is that we will know if we are using SN correctly.

In math mode, enter $3 + 9$.

Next, move your cursor to the right of the 9 in the above line.

Click on the Evaluate (= ?)button in the math toolbar.

You should see the cursor momentarily change, while SN uses its built-in Maple (a more powerful mathematical software package) tools. Then, you should see the

expression below.

$3 + 9 = 12$

Here is another simple example. The division sign came from the common symbols toolbar.

$2 \div 4$

You should get

$2 \div 4 = \frac{1}{2}$

If you want to convert your answer to a decimal fraction, put the cursor to the immediate right of the $\frac{1}{2}$, and click on the Evaluate Numerically (# = ?) button.

$2 \div 4 = \frac{1}{2} = .5$

If you need more help, first click on **Help** on the menu bar. SN includes lots of explanation and examples.

You can experiment to see how things work.

Do not hesitate to ask me. You can compose math questions in SN, and attach the document to an e-mail message to me. Then, I can answer your question mathematically and send it back to you.

_____

You may contact me at mroberts@nvcc.edu or 703-323-2150.

page revised 08/23/04