

Excel Introduction

Academic Computing Services

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Abstract: This document introduces users to basic Excel tasks, such as creating, saving, and opening new Excel workbooks and worksheets; selecting, copying, and moving data; constructing formulas; formatting worksheets; and setting up worksheets for printing. It is used in conjunction with the ACS *Excel Introduction* workshop.

Contents

Introduction	2
Objectives	2
Prerequisites	2
Related Training Available from ACS.....	2
Definitions	3
Creating and Opening Excel Workbooks	3
Inside an Excel Worksheet.....	5
Creating Formulas.....	10
Editing & Deleting Formulas.....	12
Copying Formulas and Values	12
Changing the Workbook or Worksheet Appearance.....	15
Getting Additional Help	22

Introduction

Excel is a spreadsheet that allows users to create worksheets in that store information in workbook files. The built-in functions allow users to also create and edit formulas; copy and move data; format worksheets; and set up worksheets for printing.

Objectives

The goal of this workshop is to introduce participants to the introductory commands and features of the Excel program. After today's workshop, participants will be able to:

- Create, open, and save Excel workbooks
- Select, copy, and move data
- Create formulas using relative and absolute references
- Format worksheets
- Use Page Setup to set up worksheets for printing

Prerequisites

It is assumed that the participants in this workshop have basic computing skills and know how to use the *Macintosh* or *Windows* operating system to maintain files and directories/subdirectories, open, close, and save files.

Related Training Available from ACS

All ACS workshops are free to KU students, staff, faculty, and [approved affiliates](#). The general public is also welcome to most workshops, but some ACS workshops require a [registration fee](#) for them.

To learn more about or register for workshops, receive automatic announcements of upcoming workshops, and track workshops you've registered for and have attended, visit the ACS Web site at www.ku.edu/acs/train. You can also check our online schedule at www.ku.edu/acs/schedule for a list of class offerings and their availability. For further workshop related questions, please email training@ku.edu.

EXCEL: CHARTING

This three-hour, hands-on workshop introduces using Excel to create and edit charts, modify chart options, format chart objects, as well as use trend lines, forecasts, and error bars to present data graphically. In addition, students will learn to insert Excel charts in other programs like PowerPoint or Word.

Definitions

Term	Definition
Active Cell	A cell that is selected.
Cell	Cells form where rows and columns intersect. To refer to a cell, enter the column letter followed by the row number. For example, C15 refers to the cell at the intersection of column C and row 15.
Workbook	In Excel, a workbook is the file in which you work and store your data. Because each workbook can contain many sheets, you can organize various kinds of related information in a single file. By default, all new workbooks contain three worksheets.
Worksheet (Spreadsheet)	Worksheets consist of cells that are organized into alphabetical labeled columns and numerically labeled rows and are always located within workbooks. They are used to list, organize, and calculate data. Information can be linked from one worksheet to another in the same workbook or in different workbooks.

Creating and Opening Excel Workbooks

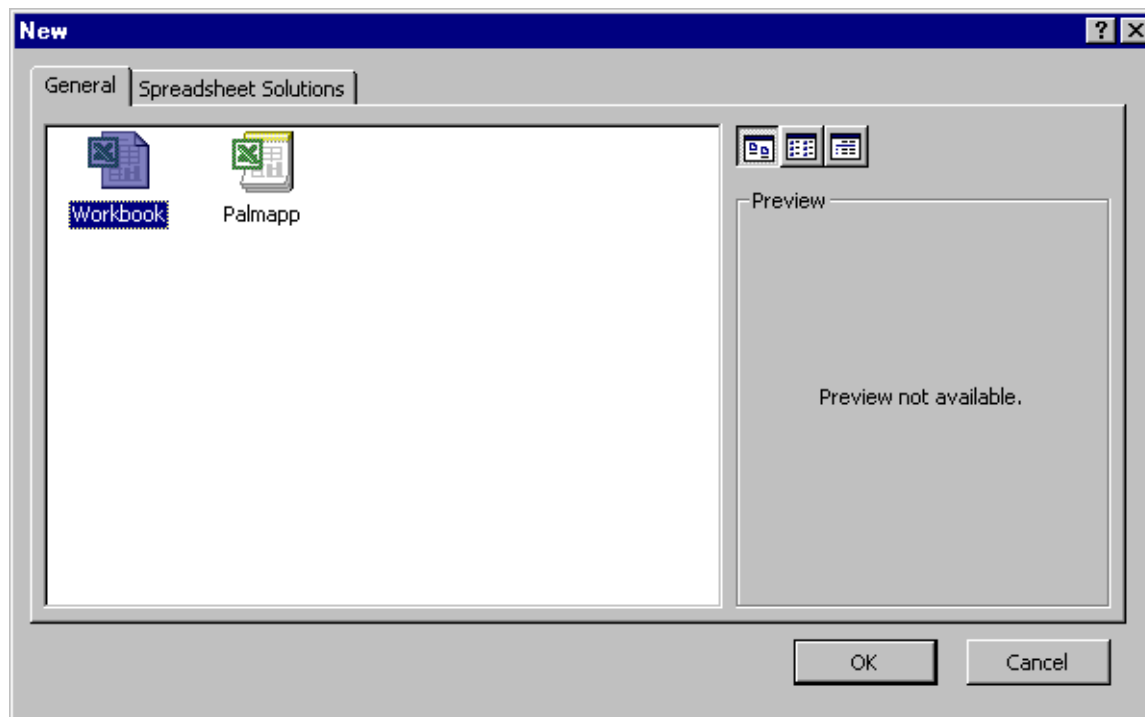
Opening Excel

When you first open the Excel program, a new workbook (Book1) will be created automatically with three worksheets. Each worksheet will be labeled Sheet1, Sheet2, and Sheet3. Worksheet tabs can be found at the bottom of the workbook window. To move from sheet to sheet, you can click the sheet tabs.

Each worksheet contains 65,536 rows and 256 columns. The columns are labeled alphabetically and run along the top of the worksheet. The rows are labeled numerically and run along the left side of the worksheet. Columns are labeled A through Z, AA through AZ, BA through BZ, etc. Rows are numbered from 1 through 65,536. A cell forms where these rows and columns intersect. The scroll bars on the right and along the bottom of the worksheet can be used to scroll to any location of the worksheet.

With Excel Open

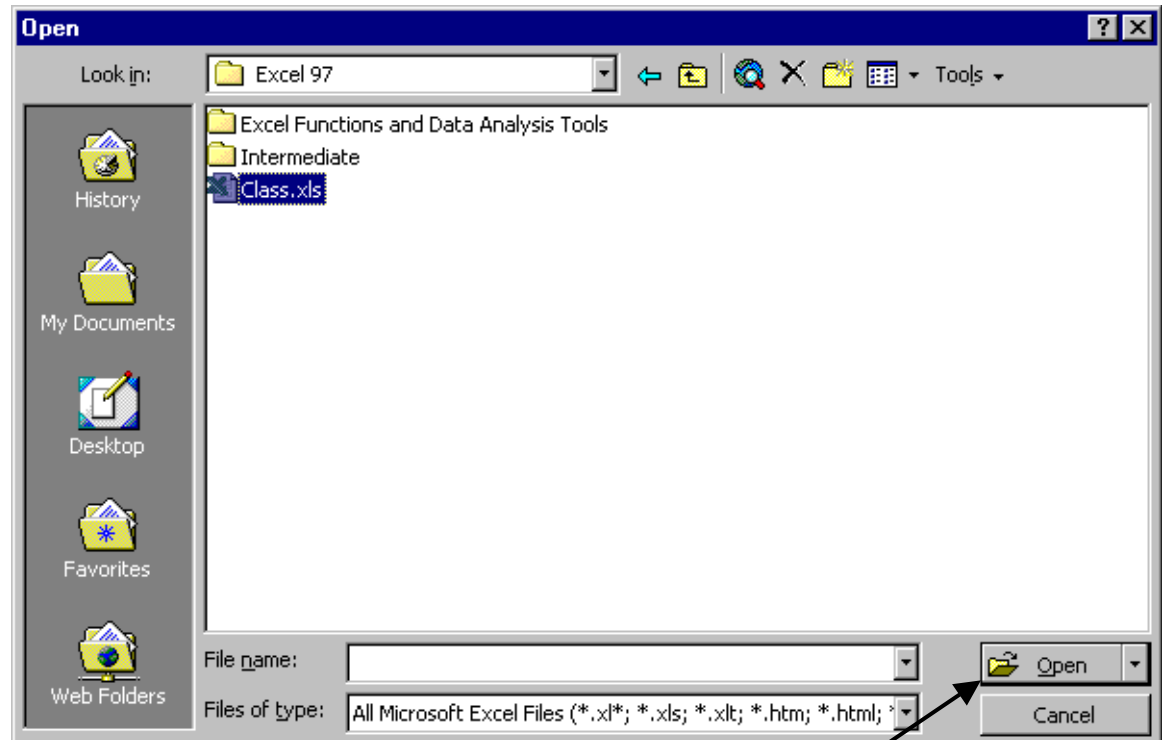
If you already have Excel open and want to create a new plain workbook, you can click on the **New** button.  If you want to create a new workbook from a template, you can click on **File→New** to see Excel's built in templates or custom templates.



Opening An Existing Workbook

You can always opening existing workbook files as well. To do this:

1. Click on **File→Open** or click on the yellow **Open** folder  on the Standard toolbar.



2. Change the folder (if needed) to find the file you want.
3. Select the file name and double click on it or click on the **Open** button.

Inside an Excel Worksheet

Pointer Appearances

In an Excel spreadsheet, your pointer appearance will change dependent upon where you are in the worksheet. It is important to understand the distinction between these mouse pointer types:

Name	Appearance	Description
Cross (Puffy Plus):		Used to select a cell or a range of cells.
I-Beam:		When you see an I-Beam, click one time for a blinking insertion point that will allow you to type in text.
Mouse Pointer:		The pointer is this shape when using toolbars, moving and resizing windows, and when moving or copying information from cells.

Selecting Parts of a Worksheet

There are lots of reasons to select, or click, in different areas of your workbook. We select cells to enter, change, and delete information. We select cells for formulas to reference. We also select cells to format their contents. Any time we select a cell, we call it an **active cell**.

Using the Mouse

Here are many ways to make a cell active by clicking or clicking and dragging with your mouse:

Item Selected	How to Select
Cell	Click on the cell.
Cell Range	Use the Cross (Puffy Plus) to click and drag across the group of cells.
Row	Click on the row number.
Column	Click on the column letter.
Multiple Rows	Click and drag down the row numbers.
Multiple Columns	Click and drag across the column letters.
Entire Worksheet	Click the gray cell between column A and row 1.
Non-Contiguous Cells	Select the first cell or range of cells and then hold down the <i>Ctrl</i> key while selecting the remaining cells.

Using the Keyboard

The keyboard is also a great way to move around inside of Excel workbooks and worksheets. Here are just a few common keystrokes or keyboard shortcuts:

Key	Direction
Enter	Moves the active cell down, row to row.
Tab	Moves the active cell to the right, column to column.
Shift/Enter	Moves the active cell up, row to row.
Shift/Tab	Moves the active cell to the left, column to column.

Ctrl/Home	Moves the active cell to A1 .
Ctrl/End	Moves the active cell the last cell that contains data.
Ctrl/Page Down & Ctrl/Page Up	Moves from one worksheet to another.
F2 key (function key)	Opens the active cell for you to edit the data in it.
Alt/Enter	Enters a hard return inside of the active cell. This will automatically wrap your text and increase the size of the cell.

Cell Contents

In Excel, you can enter four types of values: text, numbers, dates and times, and formulas. Each cell can hold up to 32,767 characters.

Text

In Excel, text is any combination of numbers, spaces, and nonnumeric characters. All cells that Excel considers to be text will be left aligned. In the following example, these entries would be treated as text:

1025A63N; 123XYZ; 10-72; 123 456.

Numbers

Numbers include the numeric characters 0-9 and the following special characters:

, + - () / E e \$ % .

If a number is wider than the cell, ##### is displayed. To display the cell contents, resize the column. Excel stores numbers up to 15 digits of accuracy. The largest positive number is 9.999999999999999E307 and the smallest positive number is 1E-307. By default, negative numbers are preceded by a minus sign. However, they can be formatted to be enclosed in parenthesis or displayed in red. Entering a dollar sign (\$) before a number or a percent (%) symbol after changes the display of the number.

Dates and Times

Excel treats dates and times as numbers. They can be displayed in several built-in formats. The way that a time or date is displayed on a worksheet depends on the number format applied to the cell. When a date or time is entered into a cell, Excel automatically changes the cells format from general to a built in date or time format. By default, dates and times are right aligned in a cell. If Excel cannot recognize the date or time format, the date or time is entered as text, which is left aligned in the cell. Date and time can be mixed into one cell, however slashes and hyphens cannot be mixed in one entry. To type a date and time in the same cell, separate the date and time with a space.

To type a time based on the 12-hour clock, type a space followed by AM or PM (or A or P) after the time. Otherwise, Excel bases the time on the 24-hour clock. For example, if you type 3:00 instead of 3:00 PM, the time is stored as 3:00 AM.

Times and dates can be added, subtracted, and used in other calculations. To use a date or time in a formula, enter the date or time as text enclosed in quotation marks. For example, the following formula would display a difference of 68:

= "5/12/94" - "3/5/94"

Some examples of date and time formats:

Date/Time Entry	Format
6/9/01	m/d/y
9-June-01	dd-mmmm-yy
June-01	mmmm-yy
9-June	dd-mmmm
7:00 AM	h:mm AM/PM
7:00:00 AM	h:mm:ss AM/PM
18:00	h:mm
6/9/01 7:00	m/dd/yy h:mm

Formulas

A formula calculates a new value from existing values. An Excel formula can contain a combination of constant values, cell references (cell addresses), range names, functions, and/or operators. Formulas always begin with an equal sign (=). Here are a few examples:

Constant Values

=(456+57)*32

Cell References

=D3/F13

Range Names

=D3*Tax

Functions

Excel contains many predefined, or built-in, formulas, which are known as functions. Functions can be used to perform simple or complex calculations. Some of the most frequently used function are the SUM, AVERAGE, PMT, DLOOKUP, and IF functions. Here is an example of the sum function adding cell addresses.

=SUM(D3:D7)

Operators

Operators specify the type of calculation that you want to perform on the elements of a formula. Microsoft Excel includes four different types of calculation operators: arithmetic, comparison, text, and reference.

Arithmetic

Operator	Meaning
*	Multiplication
/	Division
+	Addition
-	Subtraction
%	Percent
^	Caret

Comparison

Operator	Meaning
=	Equals
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
<>	Not equal to

Text

Operator	Meaning
&	Ampersand—Concatenates, or combines, two values to produce one continuous text value.

Reference

Operator	Meaning
:	Colon—A range operator, which produces one reference to all the cells between two references that includes the two references. An example would be D3:D7.
,	Comma—A union operator, which combines multiple references into one reference. An example would be SUM(D3:D7,F15,B4).

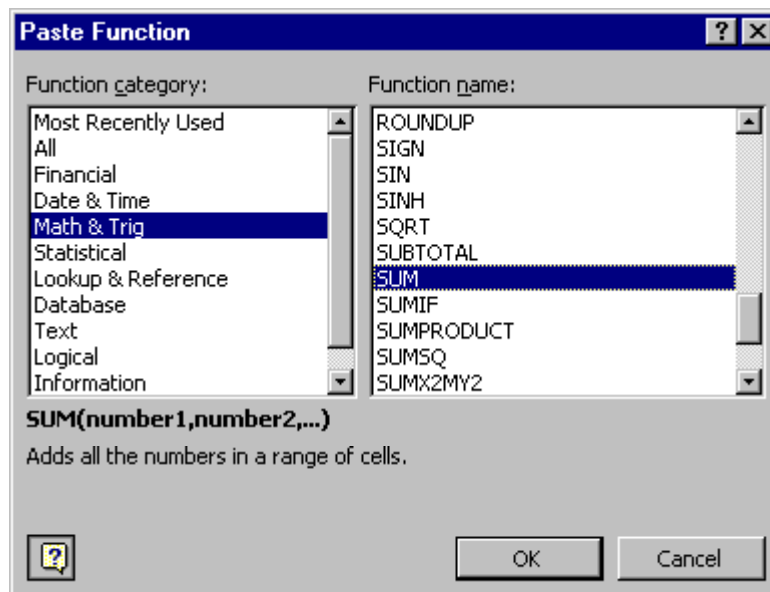
Creating Formulas

There are a couple of ways in which you can create formulas. You can type the formulas directly into the cell or formula bar; you can use Excel's built in **Formula Palette**; type a formula directly into a cell; or use **AutoSum** to add a group or range of numbers.

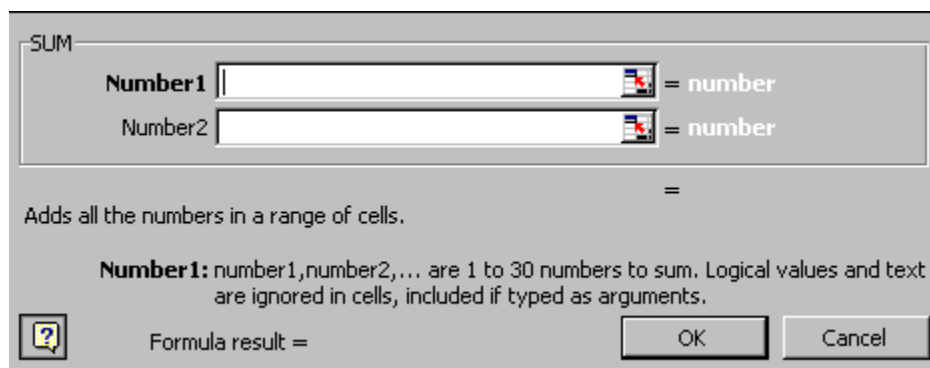
Paste Function and the Formula Palette

The formula palette (which is under the **Paste Function** button  on the **Standard toolbar**) can help you enter worksheet functions. As you enter a function into the formula, the Formula Palette displays the name of the function, each of its arguments, a description of the function and each argument, the current result of the function, and the current result of the entire formula. To display the Formula Palette:

1. Click inside of the cell where you want your results of the formula to be.
2. Click on the **Paste Function** button .



3. Choose the **Function Category** on the left side of the dialog box.
4. After choosing the category, pick which function you want from the **Function Name** on the right side of the dialog box.
5. Double click on the name of the function or click on **OK**.
6. When the **Formula Palette** opens, the function's arguments will appear.



Note: When you click inside of the blank field beside each function name, a description of each function will appear at the bottom of the **Formula Palette**.

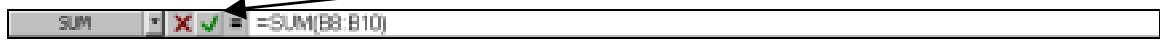
7. Fill in the arguments and click **OK**. The **Formula Palette** will close and return you to your spreadsheet with the results in your cell. The formula will appear in the **Formula Bar**.

Typing the Formula Directly in a Cell

You can also type a formula directly into a cell. To do this:

1. Activate the cell where you want the results to appear by clicking on it.
2. Type in the = sign.

3. Type in the remaining parts of your formula.
4. When finished, press **Enter** on your keyboard or click on the **green** checkmark on the **Formula Bar**.



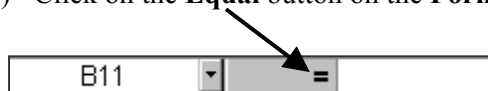
Using AutoSum

Excel's **AutoSum** feature is a very handy button used to add a group of numbers or range of cells together. To use AutoSum, simply click in the cell that you want the value of the group of numbers to appear in, click on the **AutoSum** button , readjust the formula by typing or clicking and dragging the mouse, and press **Enter** on your keyboard to finish the formula.

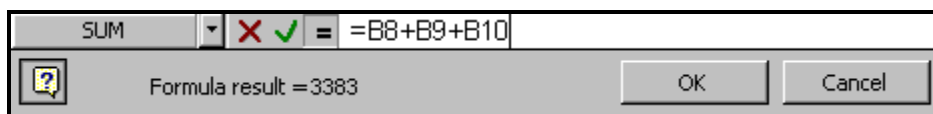
Editing & Deleting Formulas

You can also edit or delete any formulas. To delete a formula, simply click on the cell that contains the formula, and press the **Delete** key on your keyboard. If you find you just need to alter the formula, do the following:

- 1) Click on the cell that contains the formula.
- 2) Click on the **Equal** button on the **Formula Bar**.



- i) If the formula uses a built in Excel function, the **Formula Palette** will open for you to edit the arguments.
 - (a) Change the appropriate argument(s) and click **OK** or press **Enter** on your keyboard.
- ii) If the formula does not use a built in function, a small dialog box will appear.



- (a) Click in the **Formula Bar** and change the formula.
- (b) Click the **OK** button.

Note: To edit a formula, you can also click on the cell that contains the formula and then click inside of the **Formula Bar** and make your changes. If you want to edit the formula directly inside of the cell, you can **double click** on the cell that contains the formula.

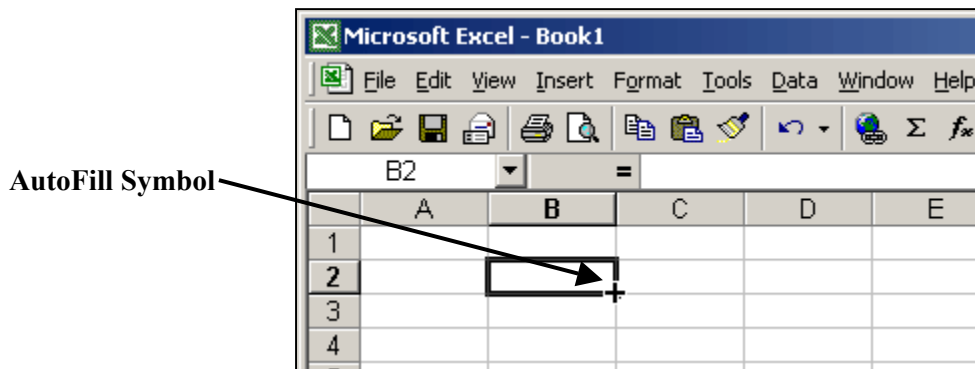
Copying Formulas and Values

There are several ways to copy and paste formulas or their values. You can always use the **copy**  and **paste**  buttons on your **Formatting** toolbar, but you can also use a feature unique to Excel called **Autofill**.

Autofill

Autofill is a great way to copy a formula to other adjacent cells. To use the **Autofill** feature, do the following:

1. Click on the cell whose formula you want to copy.
2. Place your mouse in the lower right corner of the cell. Your puffy plus (cross) will turn into a skinny plus.

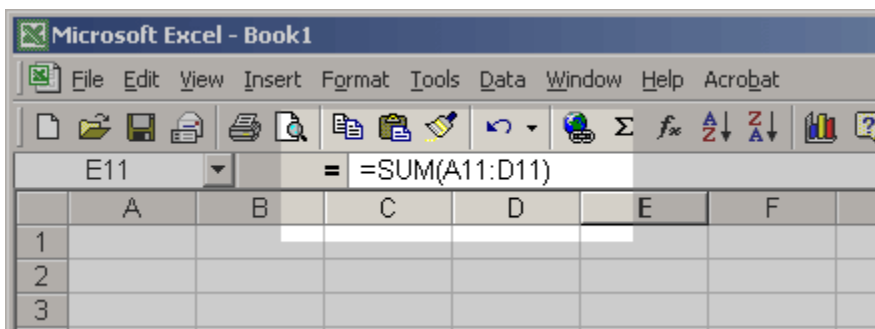


3. Click and drag the skinny plus to the adjacent cells where you want the formula to be copied.
4. When you release the click, the results will appear in each cell.

When you copy a formula to other cells using the **Autofill** method, you are using what is known as a **relative** reference or an **absolute** reference, dependent upon the type of formula you copied.

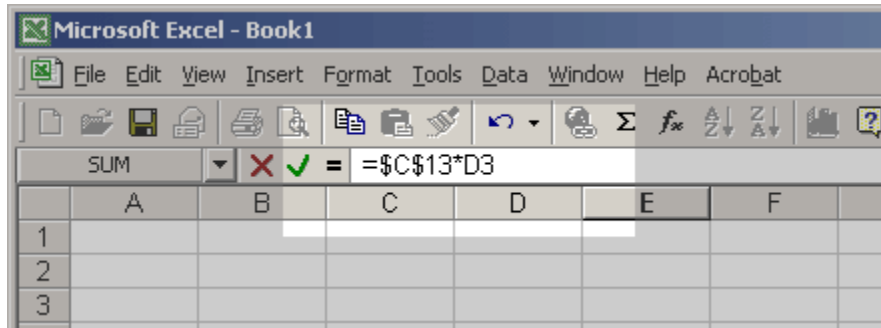
Relative References

If you create relative formulas, references to cells or ranges are based upon their position relative to the cell that contains the formula. When you copy a formula that uses relative references, Excel automatically adjusts the references in the pasted formula to refer to different cells relative to the position of the formula. For example if you copy a formula =SUM(A11:D11) from E11 to E12, then the formula will adjust to =SUM(A12:D12).



Absolute References

If you create absolute formulas, then you are telling Excel that you do not want the formula to adjust when copying it to a different location. The way to create this type of reference is by placing a dollar \$ sign before the parts of the formula you do not want to change. For example if your formula is `=C$13*D3` and you copy the formula from D4 to E4, only the second part of the formula would adjust to say `=C$13*E3`.



Copying Values

Sometimes, you might only want to copy the cell result or value instead of the formula. To do this, you can do the following:

1. Click on the cell whose value you want to copy.
2. Click on your **copy** button  or **Edit→Copy**.
3. Activate the cell you want to copy the value to by clicking on it.
4. Click on **Edit→Paste Special...**



5. In the **Paste Special...** dialog box under **Paste** at the top, choose **Values**.
6. Click **OK**.
7. When you look in the formula bar, you should only see the value you just copied, not the formula.

Changing the Workbook or Worksheet Appearance

You can also change the appearance of worksheets and workbooks by renaming, moving, copying, inserting, and deleting worksheets; inserting and deleting cells, columns, and rows; and formatting the worksheets themselves.

Workbook Maintenance

Often times, we need to add, delete, rearrange, and name worksheets in our workbooks. Keeping our workbooks organized can help us find our information quickly and easily.

Naming Worksheets

To name a worksheet something other than the default, you can do the following:

1. Place the mouse pointer directly on the worksheet tab you want to rename.
2. Double click to highlight the name of the sheet.
3. Type over the existing name and press **Enter** or click anywhere in the worksheet.

Adding Worksheets

To add a new worksheet to your workbook, do the following:

1. Click on the sheet tab that you want the new worksheet to come before.
2. Click on **Insert**→**Worksheet**.
3. The new worksheet will appear.
4. Rename the worksheet as needed.

Rearranging Worksheets

There are a couple of ways in which you can rearrange worksheets. One way would be to move it within the same workbook and another would be to move or copy it to a different workbook.

Moving a sheet within a workbook

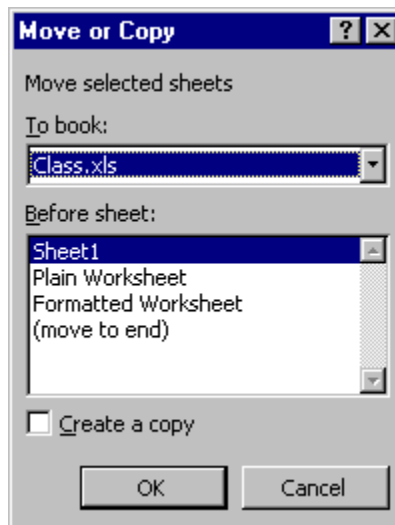
To move a spreadsheet to a different location in the same workbook, you can do the following:

1. Point at the sheet tab you want to move with your mouse pointer.
2. Click and drag the sheet tab. As you do this, you will see what looks like a piece of paper and a small black arrow.
3. Continue to drag the sheet until the arrow points to the place you want to move the sheet.
4. When you let go of the click, the sheet will be moved.

Copying (or moving) a sheet to an existing workbook

To copy or move a spreadsheet to an existing workbook, you can do the following:

1. Open the workbook whose sheet you want to move or copy.
2. Open the existing workbook that you want to move or copy your spreadsheet to.
3. Click on the **Window** menu and click the name of the workbook whose sheet you want to copy. This will switch you back to that workbook.
4. Click on the sheet tab you want to move or copy.
5. Click on **Edit** → **Move or Copy Sheet...**



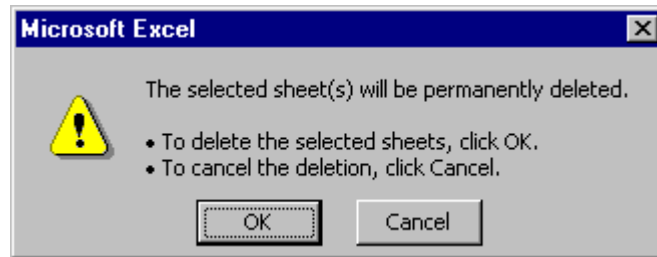
Note: To **copy** the sheet, but not move it, make sure you check the box in the corner of the **Move or Copy** dialog box that says **Create a copy**. Otherwise, you will move the sheet instead of copying it.

6. When the move or copy dialog box opens, choose the name of the workbook you want to move or copy your sheet to from the **To Book:** drop down list.
7. Click on the sheet name you want to move or copy the sheet in front of from the **Before Sheet:** box.
8. Click **OK**.
9. Excel will switch you to the other workbook. Make sure you save your changes before closing the book you just moved or copied to.

Deleting Worksheets

You can also delete worksheets you no longer need from your workbooks. Make sure that you only delete sheets you know for sure you no longer need or want. When you delete an Excel spreadsheet, it is **permanent**. Here are the steps for that:

1. Click on the sheet tab of the worksheet you want to **permanently** delete.
2. Click on **Edit→Delete Sheet**. A dialog box will appear to confirm the deletion.



3. Click **OK** to **permanently** delete the entire worksheet. If you change your mind and decide not to delete the spreadsheet, click **Cancel**.

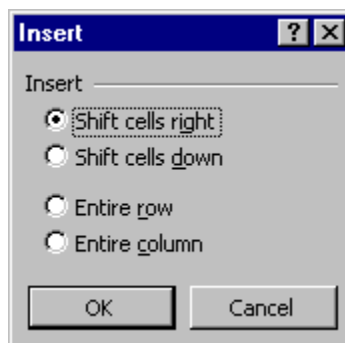
Worksheet Maintenance

There might be times when you need to add or delete cells, rows, or columns to your worksheets. All of these things can be easily done.

Adding or Deleting Cells

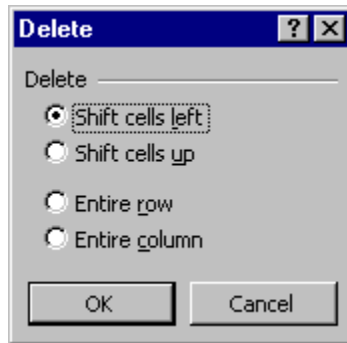
Sometimes you might find that you need to add or delete a cell or several cells from your worksheet. To do this, you can do the following:

1. Select the cell or range of cells you want to insert cells before or delete.
2. To add cells before these cells, click on **Insert→Cells...**
 - i.) The **Insert Cells** dialog box will open.



- ii.) Choose the option you want and click **OK**.

3. To delete cells before these cells, click on **Edit→Delete**.
 - i.) A **Delete** dialog box will open.



- ii.) Choose the option you want and click **OK**.

Adding or Deleting Rows and Columns

You can also choose to add or delete entire rows or columns from your spreadsheet. If this is what you need, do the following:

1. Select the column letter or row number that you want to insert the entire row or column before or delete.
2. To insert a **column** before the one you've chosen, click on **Insert→Column**. If you clicked on a row instead, click on **Insert→Row**.
3. To delete the column or row you've chosen, click on **Edit→Delete**.

Formatting Worksheets

There are several ways to format your Excel worksheets, whether you're trying to format the cells or the cell contents. One way is to the **Formatting** toolbar or the format dialog box. Another way is to use a feature called **AutoFormat**. The **AutoFormat** option is a great way to format your spreadsheet quickly. Even if you choose this option, you can still change any formatting you don't like that **AutoFormat** added.

Formatting Toolbar and Dialog Box

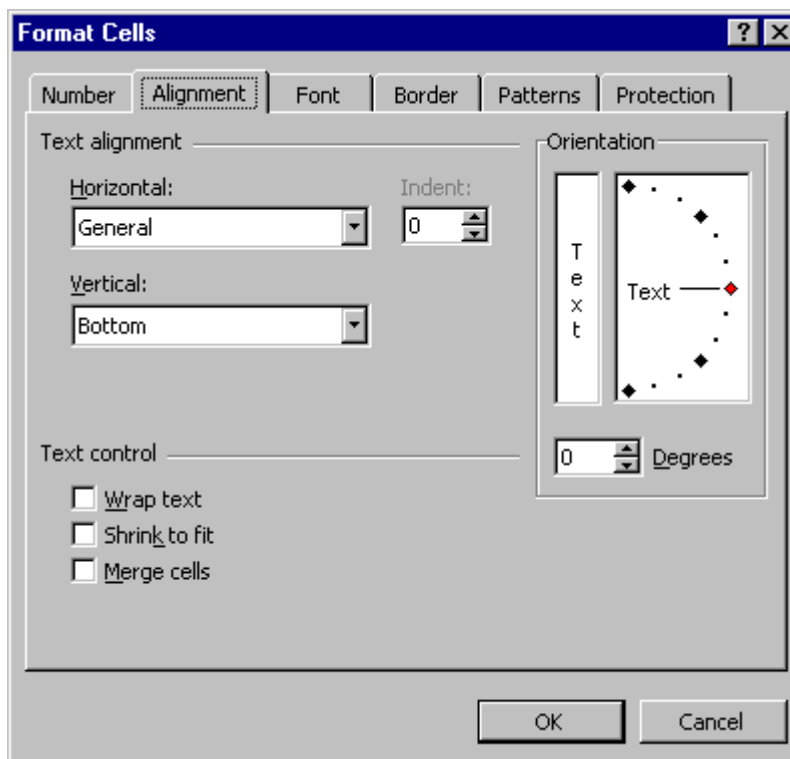
The **Formatting** toolbar and dialog box are two ways to nicely format your worksheet. Using either option you will find things such as the following:

- Formatting numbers
- Changing the font, color, size and alignment
- Changing the cell colors and/or patterns.
- Adding borders to cells

To utilize the features on the **Formatting** toolbar, simply make the cell or group of cells you want to format active by clicking on them, and click on the button(s) you want to use to make your changes. The **Formatting** toolbar looks like this:



If you want more options than what the **Formatting** toolbar offers, then use the **Format Cells** dialog box instead. Make sure you click on the cell or groups of cells you want to format and then click **Format→Cells...**. When the **Format Cells** dialog box opens, you will notice that there are six different tabs you can choose options from: *Number*, *Alignment*, *Font*, *Borders*, *Patterns*, and *Protection*. Make any changes you need to and then click on **OK**. Here is a picture of the *Alignment* tab in the **Format Cells** dialog box:

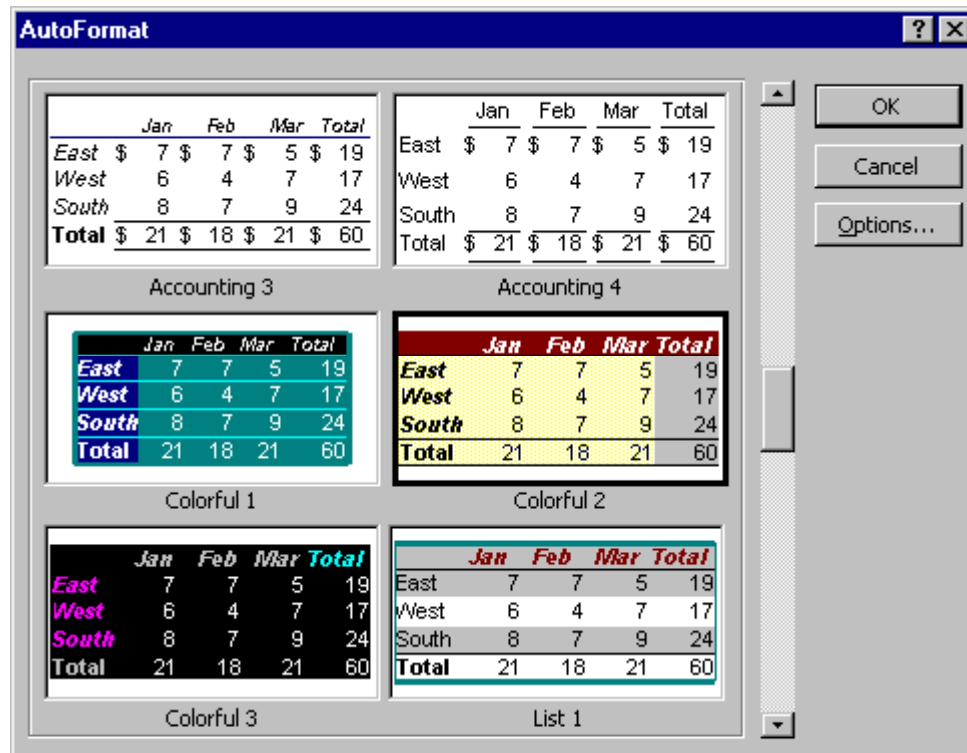


Note: On the *Protection* tab, you'll notice the note that says locking cells or hiding formulas will only work if the worksheet is protected. Protecting worksheets is not covered in this class. It will be covered in the **Excel: Functions and Data Analysis Tools** workshop.

AutoFormat

Excel's **AutoFormat** feature is a great way to quickly format your worksheet. To use it, do the following:

1. Select the group of cells you want to format.
2. Click **Format** → **AutoFormat...**



3. The **AutoFormat** dialog box will open for you to change to the format you like by clicking on the pictures. Use the scroll bar on the right side to scroll through.
4. If you want to change any of the formatting options, click on the **Options...** button in the **AutoFormat** dialog box.
5. Once you find a format you like, click on it and then click **OK** to format your cells and close the dialog box.

Clearing Formats

If you decide you don't like the format you've chosen for your cells, you can quickly clear the format without deleting the contents of the cells. To do this:

1. Select the groups of cells whose format you want to clear.
2. Click on **Edit→Clear→Formats**.

Note: Make sure you only choose **Formats**. If you choose **All** or **Contents**, you will delete the information as well. If this accidentally happens, just click on your **Undo** button  or click **Edit→Undo** and everything will reappear.

3. The format of your cells will be changed back to *Normal* but the information will still be there.

Getting Additional Help

Academic Computing Services provides consulting and Q&A help in a variety of ways:

785/864-0200

question@ku.edu

www.ku.edu/acs/help

To evaluate this course online, please visit www.ku.edu/acs/training/evaluation.

Last Update: 05/10/2002