



Excel 1

Introduction to Excel
Office 2000 version

CAL People and Computer Training
University of California, Berkeley

For more information about the CAL PACT program, to sign up for classes, or to download class documentation, please visit our website at: <http://calpact.berkeley.edu/>



Use this
space for notes

Introduction

Excel 1 is a course created for CAL PACT participants to learn about the features of Microsoft Excel. The course covers introductory material and applies to both the Windows and Macintosh computer platforms. This document serves as a future reference for you as you continue to gain experience on your own. Some topics may not be covered in as much detail during class as they are in this document. Documentation is available for previous versions of Excel on the CAL PACT website at <http://calpact.berkeley.edu>

Skills you need for this course

- How to use the mouse
- Familiarity with the Windows or Mac operating systems

Skills and concepts learned in this course

- What is Excel?
- Using menus and toolbars within Excel
- Data entry and manipulation
- Basic formatting
- Sorting data
- Printing and customizing print-outs

Conventions used in this document

Menus and menu commands are separated by a vertical bar (|). In the document they will appear as **Menu|Command**. An example of this is “Select **File|New...**”

What is Excel?

Microsoft Excel is a **spreadsheet** program that records, analyzes, and calculates data. The power of Excel comes from its ability to eliminate the need for repetitive calculations and automatically update data. Excel can also organize and present data using a variety of graphs and charts.

Excel's Major Features:

Worksheet

A worksheet can store, manipulate, calculate, and analyze data such as numbers, text, and formulas. Excel allows you to create multiple worksheets within a single workbook file.

Database

A database can conveniently sort, search, and manage a large amount of information on a worksheet. But remember that Excel's database capabilities are very limited when compared to a full-featured database program.

Charts

Charts can quickly and visually present worksheet data. A variety of chart formats are available, which will be discussed in a later class.

Macros

Macros can automate frequently performed tasks and perform specialized calculations.

Excel is Good but...

Excel works best with data values. As a consequence of this, Excel will not plot mathematical functions effectively (such as $f(x) = x^2$). However, to better organize the results of a survey (or experiment), Excel would be a wonderful tool.

Excel is inadequate as a large-scale database (such as repetitive records exceeding fifty entries that include both text and number entries). Excel does have some rudimentary database functions, but there are other database programs, such as FileMaker and Access, that provide better formatting options and easier presentation of records. The key is to evaluate the kind of data you are entering and the kind of results you need before you entering a significant amount of data. This will save you time and the headache of transferring data between programs.

Opening Excel Files

Creating a New Workbook

Launching Excel should automatically open a new workbook, called Book 1 by default. If Excel did not open a new workbook or if you would like to open an additional new workbook, select **File|New....**

Opening an Existing Excel File

To open an existing Excel file, select **File|Open....** In the dialog window that appears, direct Excel to the file you want to open.

Understanding Your Screen

Menu Bar



All the commands available in Excel are contained in the **menu bar**. The commands are categorized into **nine main menu headings** as shown in the figure above. The contents of each menu can be displayed by clicking once on the name of the menu in the menu bar. This is called activating the menu. Clicking on the menu reveals a “pull-down” menu. Each pull-down menu displays a list of commands and options available within that category. Move the mouse to highlight the desired command and click the mouse button to activate the command.

Toolbars



Using **toolbars** is another way to execute commands with a single click of a mouse button. Toolbars allow quick access to commonly used commands, providing an alternative to using the menu bar.

To select which toolbars appear on the screen or to customize the toolbar, go to **View|Toolbars....** In the dialog window check off the desired toolbars and click **OK**.

Formula Bar

	A	B	C	D	E	F	G	H
1	53	52	1					
2	5678	64	5					

The **formula bar** displays the location and data of the active cell. The contents within the cell can be edited here. When data values such as characters or numbers are entered in a cell of the spreadsheet, the information will be displayed in the formula bar and on the spreadsheet. If formulas are entered in a cell of the spreadsheet, the formula bar will display the actual formula while the spreadsheet will display the results of the formula, as is the case in the figure above.

Status Bar



The **status bar** is located at the bottom of your Excel window. The left side of the status bar displays a brief description of the currently selected command or the current activity in progress. The right side indicates whether a keyboard mode such as Overwrite (OVR), Number Lock (NUM) or Caps Lock (CAPS), etc., is active.

Scroll Bar



The **scroll bar** allows you to scroll in between sheets or within the sheet currently selected. You can rename a sheet by double clicking on the sheet tab.

Column headings & Row headings

	A	B	C
1			
2			
3			

Column headings are referenced by letters; row headings are referenced by numbers. References to cells are made by citing the column letter followed immediately by the row number. Following are examples of cell references:

Cell reference

Cell A1

The cells being referenced

The single cell in column A, row 1

A1	=	1234	
	A	B	C
1	1234	52	1
2	5678	64	5
3	9101	38	7

Cells A1 to C3

The range of cells beginning with the cell in column A, row 1 and ending with the cell in column C, row 3.

A1	=	1234	
	A	B	C
1	1234	52	1
2	5678	64	5
3	9101	38	7

Cells A1 and C3

The cell in column A, row 1 **and** the cell in column C, row 3.

A1	=	1234	
	A	B	C
1	1234	52	1
2	5678	64	5
3	9101	38	7

Reminder ✓

Do not use the arrow keys after cells are highlighted. Using the arrow keys will result in selecting a new active cell.

Working with Data in Cells

Cell selection, also called cell highlighting, is one of the most important skills to master in Excel. Whenever a command is activated, Excel executes the command on the cells selected. This can consist of one cell or a range of multiple cells. See **Table 1 - Cell Selection** for a guide on cell selection. Mastering cell selection allows for an increase in productivity and a decrease in user error.

Inside a region of selected cells, there is always an **active cell**. Active cells are most commonly denoted by a thick border around the cell. When one cell is selected, the cell is both selected and the active cell, as shown in the formula bar.

When a region of multiple cells is highlighted, one cell inside the selected region is still the active cell. Since highlighting causes the selected region to appear shaded, the active cell is denoted by the white background inside the selected region. Note that only one cell is active at any given time.

Table 1 - Cell Selection

Action	Selection Method
Selecting a single cell	<ul style="list-style-type: none"> • Click on the cell using the mouse • Use the arrow keys to move to the desired cell
Selecting an entire row	Click on the row header of the row to select
Selecting an entire column	Click on the column header of the column to select
Selecting an entire worksheet	Click on the box in the upper left where the column and row headers meet
Selecting multiple adjacent cells	<ul style="list-style-type: none"> • Click and drag the mouse over the cells to select • Use the mouse and select the first cell (top left cell), then hold down the shift key while selecting the last cell (bottom right cell)
Selecting multiple adjacent columns or rows	<ul style="list-style-type: none"> • Click and drag the mouse over the row/column header of the rows/columns you want to select • Use the mouse and select the first row/column header of the desired row/column, then hold down the shift key while selecting the header of the last row/column desired
Selecting multiple non-adjacent cells	Use the mouse and select the first cell, then hold down the control key (Windows) or the command key (Mac) and select the remainder of the cells
Selecting multiple non-adjacent rows or columns	Use the mouse and select the first row/column header of the desired rows/column, then hold down the control key (Windows) or the command key (Mac) and select the remainder of the rows/columns desired.

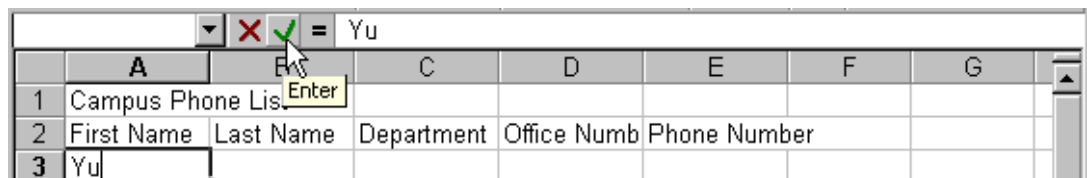
Data Entry


To enter data in a cell, select the cell and begin typing. Notice that typing data causes the data to appear both in the cell of the spreadsheet and in the formula entry bar. As data is entered, Excel changes into formula entry mode. This is denoted by the red X (cancel), the green check (enter), and the “=” sign (f(x) button) which appear inside the formula entry bar.

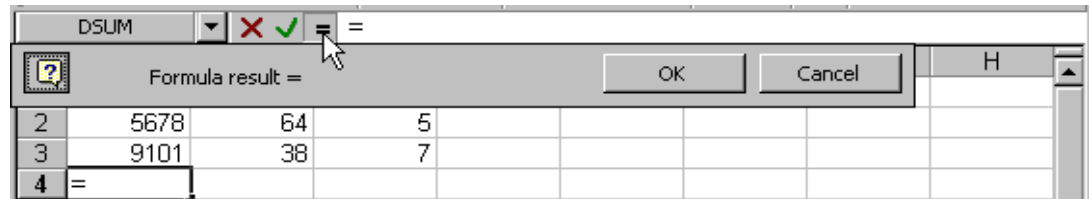
Note



When Excel is in formula entry mode, many commands are not available for use. Remember to exit formula entry mode by accepting the entry or cancelling the entry before selecting commands.



To complete a cell entry or an edit, click the green check, or press ENTER. To cancel an entry or edit, click the *red X* or press ESC. To create an algebraic function, click on the “=” button or the  button in the toolbar.



Editing Cell Entries

After data has been entered into a cell, the data can be edited. By selecting a cell and typing, the new entry will completely replace the existing data. To avoid this, there are various ways to edit portions of the data in a cell. See **Table 2 - Cell Editing** below for a help on editing cells.

Table 2 - Cell Editing

<i>Editing Feature</i>	<i>Method(s)</i>
Replace the contents of a cell	Select the cell and enter the new data.
Change a portion of the data in a cell	<ul style="list-style-type: none"> • Click in the formula entry bar. The pointer will change into an I-bar. Then edit within the formula entry bar. • Double click on the cell to edit. • In Windows, select the cell and press F2 on the keyboard. Select the cell and enter the new data.

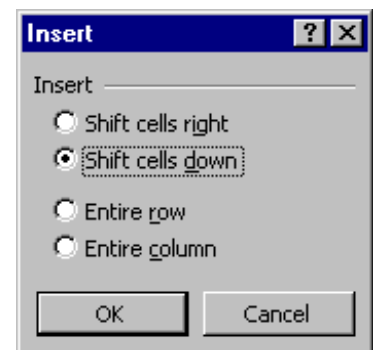
Manipulating Cells

Insert

After data is entered on the worksheet, it is possible to insert blank cell(s) or row(s) between occupied cells to make room for new data or to create more white space in the data area. Blank cells, rows, or columns can be inserted anywhere on the worksheet.

To insert a new cell or cells:

1. Select the location and number of cells you want to insert.
2. Select **Insert|Cells...** or use the key stroke Ctrl+Plus Sign (Ctrl+Shift+=) on the keypad for Windows or Command+I on the Mac.
3. The **Insert** dialog window opens where you can choose which way the existing cell(s) should shift to make room for the new cell(s). There is also the option to insert new

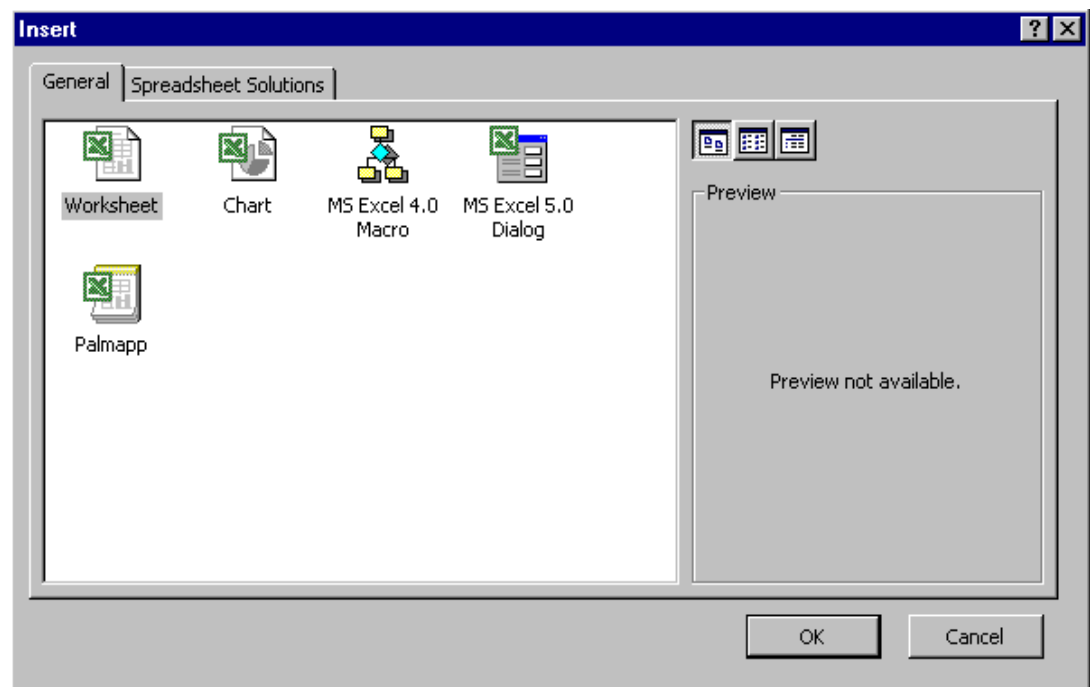


row(s) which will shift the existing cells of the currently selected row(s) down. Inserting new columns is another available option which will shift all the cells of the currently selected column(s) to the right.

To insert new rows or columns:

1. Select the row or column heading(s) where the new row(s) or column(s) will be inserted.
2. Select **Insert|Rows** or **Insert|Columns** or use the key stroke Ctrl + Plus Sign (Ctrl+Shift+=) on the keypad for Windows or Command + I on the Mac.
3. Excel formats the inserted cell(s) the same as the cells around them.

To insert a new sheet:



Select **Insert|Worksheet** and click and drag the new sheet to the area you would like.

or

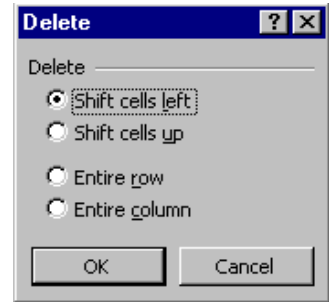
You can also right click on any sheet in the scrollbar and have the option to Insert a new sheet. This will open a worksheet wizard which contains worksheet templates and macros to ease in formatting. A new sheet called "Sheet1" will open in front of the selected sheet.

Delete

Use the Delete command to remove cells from the worksheet and delete the space occupied by those cells. Unlike copying or cutting data, deleted cells are not stored on the clipboard. Use the Cut and Paste commands discussed later to move data to a new location.

To delete a cell or cells:

1. Select the location and number of cells to delete.
2. Select **Edit|Delete...** or use the key stroke Control + Minus Sign on the keypad for Windows or Command + K on the Mac.
3. The **Delete** dialog window opens. Choose which way to shift the existing cells. There is also the option to delete the entire row, which will shift the remaining rows up or delete the entire column, which will shift the remaining column to the left.

**To delete rows or columns:**

1. Select the row or column heading(s) of the row(s) or column(s) to delete.
2. Select **Edit|Delete...** or the key stroke Control + Minus Sign on the keypad for Windows or Command + K on the Mac.

Note

It is usually better to delete a whole sheet than to clear a sheet of all its contents.

To clear a selection of its content only, hit the Delete button on your keyboard. For the Mac, you may also use $\text{⌘} + B$.

To delete a work sheet:

Simply select **Edit|Delete Sheet**.

Clear

Clearing a cell clears the contents, formats, or notes, or all three from that cell, but leaves the cleared cell in the structure of the worksheet.

To clear a cell, row, or column:

1. Highlight the intended cell, row, or column to clear.
2. Select **Edit|Clear**.
3. At this point either select All, Formats, Contents, or Comments.

What is the difference between Clear and Delete?



If a cell's contents are cleared, there is no data in the cell and the cell remains. However when a cell is deleted, the cell is completely removed and adjacent cells move to close up the space that was occupied by the deleted cell. This causes two main problems:

- **Aesthetics** - Clearing a cell allows the cell to remain while deleting a cell will cause that cell to be replaced by an adjacent cell. This result shifts your worksheet data around.
- **Formulas** - if the formula "=A1*B1" is in a cell, clearing cell A1 or B1 will produce the #REF! error on the worksheet to indicate that the formula needs to be adjusted.

This is a common error among Excel users who try to clear the existing cell of old data or formats in order to enter a new set of data or formats. By deleting the existing cell instead of clearing the cell, they no longer have the correct cell or space in which to enter new information.


Copy

Use this command to make a copy of the selected cell(s) which automatically places them on the clipboard.

1. Select the desired cell(s).
2. Select **Edit|Copy**, or click on , or use the key stroke Control + C for Windows or Command + C for Macs.
3. The selection is stored on the clipboard and is available for pasting. Copied cell(s) will have a moving dashed rectangle around it. 


Cut

Use this command to remove the selected cell(s). Any cut cell automatically move to the clipboard.

1. Select the desired cell(s)
2. Select the **Edit|Cut**, or click on , or use the key stroke Control + X for Windows or Command + X for Macs.
3. The selection is stored on the clipboard and is available for pasting. Cut cell(s) will have a moving dashed rectangle around it.

Paste

Use this command to place the contents of the clipboard into the selected cell(s). The Paste command is only functional after cells have been cut or copied onto the clipboard.

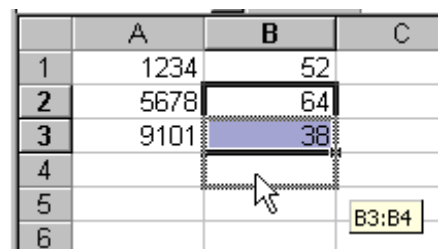
1. Select the cell where the clipboard contents will be placed. Select either:
 - a paste area equal to the size of the copied or cut cell(s) (i.e. 2x2 or 4x4)
 - or*
 - the first cell where the copied or cut cell(s) will be pasted. The cells on the clipboard are pasted in the same order in which they were copied or cut.
2. Select **Edit|Paste**, or click on , or use the key stroke Control + V for Windows or Command + V for Macs.

Drag and Drop

Drag and drop is the same thing as copying and pasting cells, only faster.

1. Select the desired cell(s).
2. Move the mouse to the edge of the highlighted area. The pointer will change from a cross to an arrow.
3. Click on the selection and hold down the mouse button. Drag the mouse to the new position desired for the selected cells. A small box will appear with the range of destination cells. Release the mouse button to move the cells. To copy the cells, hold the Control key on the keyboard as you perform the drag and drop procedure.

	A	B	C
1	1234	52	
2	5678	64	
3	9101	38	
4			
5			
6			



Caution



When pasting cells, be aware that pasted cells will overwrite any existing cells and their data.

Tip



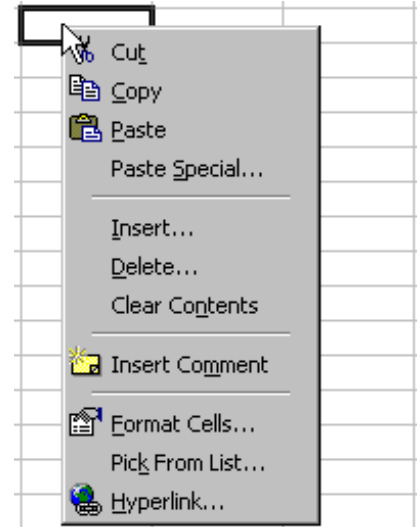
Paste Special

Use this command to place only the format or data of a copied cell. Select **Edit|Paste Special...** and choose the desired option.

Quick Edit Menu

To activate the Quick Edit Menu:

1. Move the pointer over the cell to change or highlight a selection of cells.
2. Right click on the cell selection. (Since the mouse on the Mac has only one button, you can activate the quick edit menu by holding down the Control key while clicking on the cell selection.)
3. Move the mouse pointer to the command desired and click the mouse button to activate.

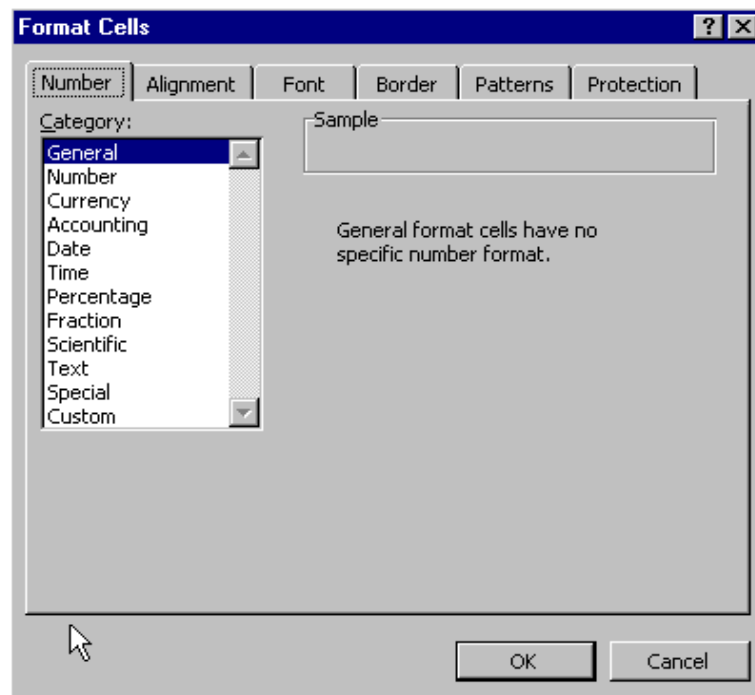


Cell Formatting

Cell formatting allows for a change in the appearance of data in a worksheet such as formatting numbers to designate dollar amounts, percentages, decimals, or changing the font, size, style, color, and alignment of data in a cell.

You can also change the appearance of the cells in the worksheet by adding color or borders to cells.

To activate the Format Cells Menu, highlight the cells you want to format and select **Format|Cells...** The **Format Cells** dialog window will appear.



Many of the common formatting commands can also be accessed though the formatting toolbar.



FYI



As with all editing, first highlight the area to which the formatting will be applied.



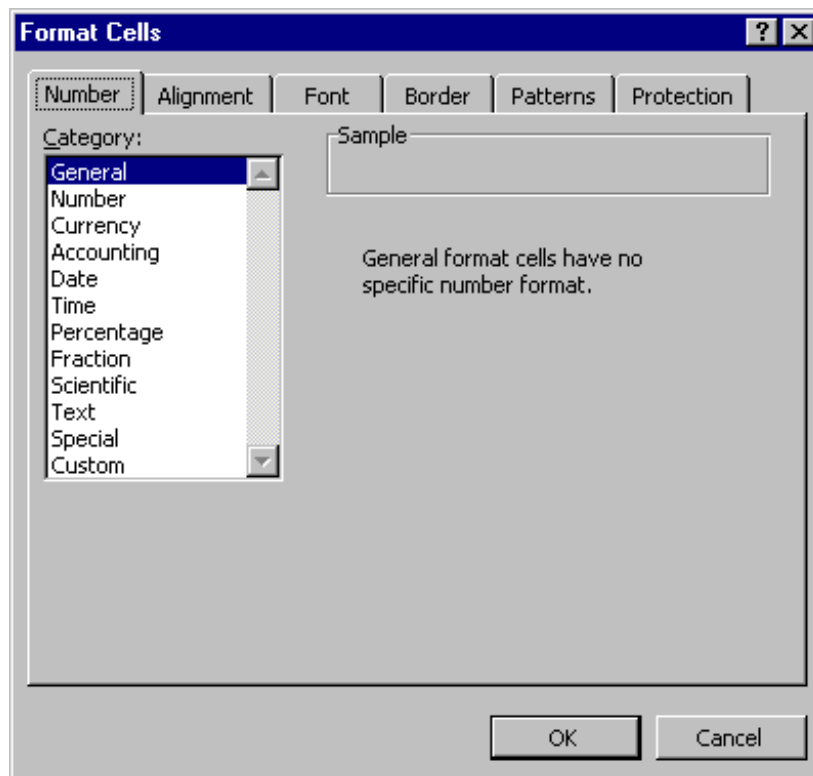
Number

The number format designates how data is displayed in Excel. Cell data can be converted from decimals into currency **\$**, or percent **%**, without having to type a \$ sign in front of every single entry. Excel can also customize how data is displayed, such as the appearance of commas **,** or the number of decimal places that will appear. In the toolbar this button  will increase the number of decimals shown by one and this button  will decrease the number of decimals shown by one.




Excel also offers other options to format data such as date, time, fraction, scientific, text and even custom formatting.

The **Category:** box in the **Format Cells** dialog window shows the code being used for the selected cells. If necessary, edit the format by clicking on the appropriate category and selecting the desired options there.


The **Sample** box displays a sample of the format selected. In other words, it shows how the data will look on the spreadsheet. If there is no data in the active cell, a sample will not be shown.

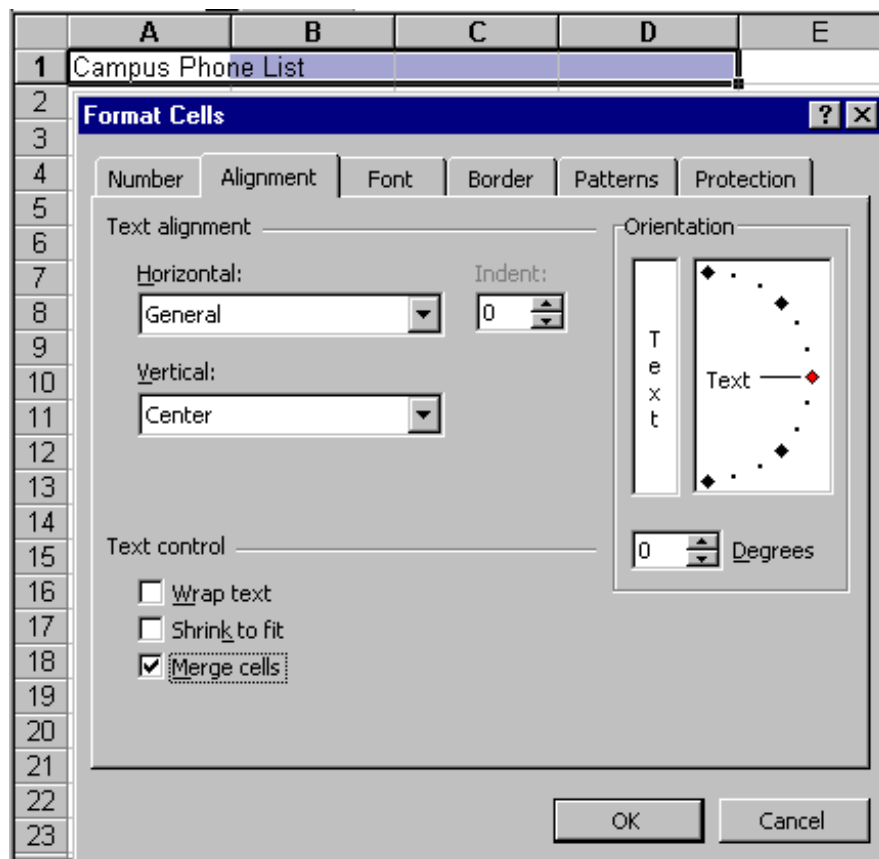


Alignment

The Alignment tab provides you with a variety of options for aligning and orienting the text to fit your needs. In the **Text alignment** area you can choose whether to have your text be left aligned , centered , or right aligned  within cells, as well as choose how the contents will be vertically aligned. You can also change the orientation of text within cells by choosing the desired settings in the **Orientation** area of the tab. Additionally, the **Text control** area of this tab gives you control over how lengthy portions of text will appear in cells. Highlight the range of cells and select the alignment desired. In addition, text within a cell can be aligned between a range of blank cells.

As an example, this is how to center text within a range of cells:

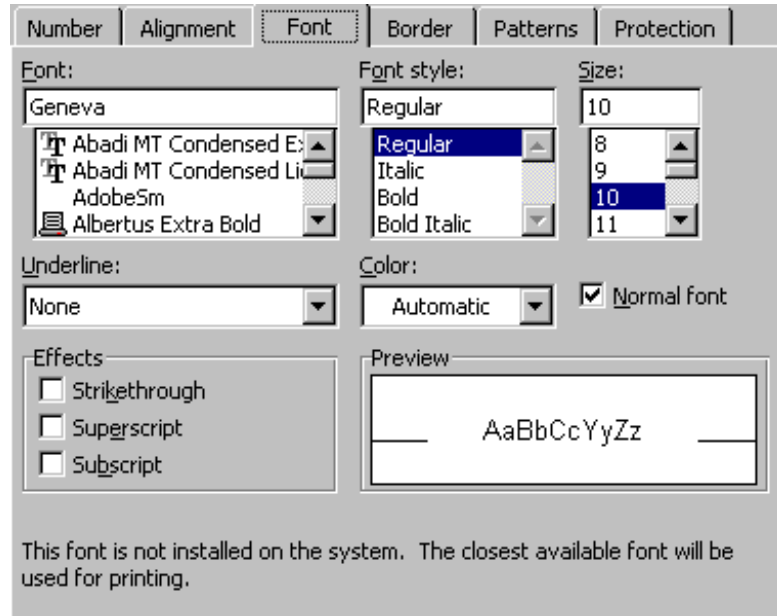
1. Enter the data to center in the left-most cell.
2. Highlight the range of cells to center across.
3. Click on the  button or select **Format|Cells...** Under **Horizontal:** select **Center Across Selection**. You can also merge the cells if you wish.



Fonts

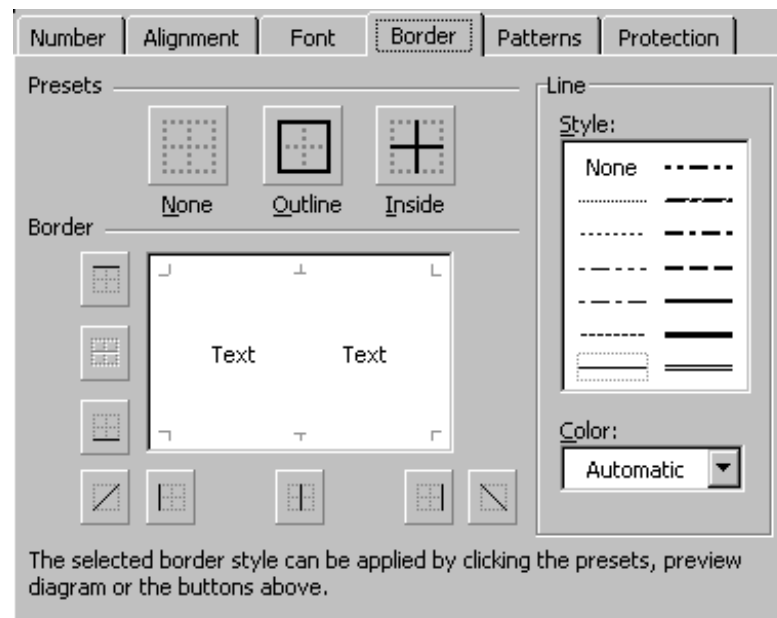
The formatting toolbar allows you to make changes to the font Geneva, the font size 10, the style: bold **B**, italics *I*, underline U, and the color A.

You can also make these changes in the **Font** tab, as well as apply font effects such as strike through, superscript, subscript, outline, shadow and various types of underlining. A benefit to using the **Font** tab is the presence of the **Preview** box.



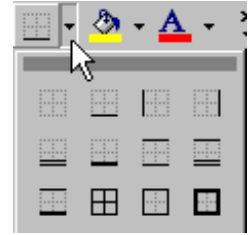
Border

The **Border** tab can help you enhance the visual presentation of your data by adding borders to cells. Keep in mind that adjoining cells share borders. For example, placing a bottom border on one cell produces the same effect as placing a top border on the cell below it. Experiment to find out what best suits your needs.



To add borders to cells, rows, columns, or sheets:

1. Select the area that the border will be applied to.
2. Select **Format|Cells...** and choose the **Borders** tab.
3. You can also use the **Border** button on the formatting toolbar. Clicking the button will apply the border type shown on the button. Clicking on the down-pointing arrow will allow you to change the type of border applied when clicking on the button.



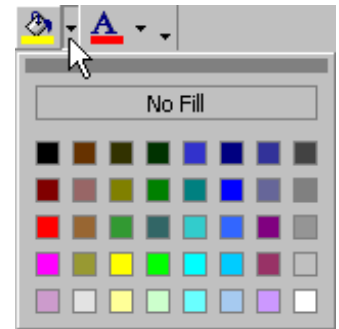
Note



Unless the document is printed on a color printer, the colors will be translated into shades of gray when printed.

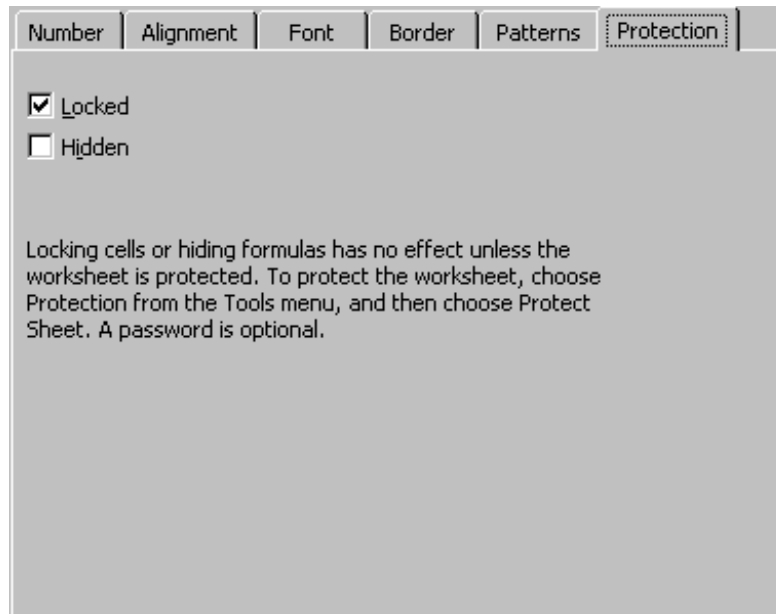
Patterns

The **Pattern** tab and the **Pattern** button on the formatting button both apply color (or shading) to the background of a selection to help you produce a higher impact document.



Protection

Use the **Protection** tab to lock any cells from being changed. Before cells can be locked, the entire sheet must be protected. To protect the entire sheet, select **Tools|Protection**. Return to the **Protection** tab after the sheet has been protected.



Note



Changing a cell width will automatically change the width of the whole column.

Changing a cell height will automatically change the height of the entire row.

Width and Height

To manually change the height or width of a cell:

1. Select the cell(s) to format.
2. Select **Format|Row|Height** or **Format|Column|Width**, as appropriate.
3. Enter the new value for the height or width.

Use AutoFit to change the width of a column and height of a row.

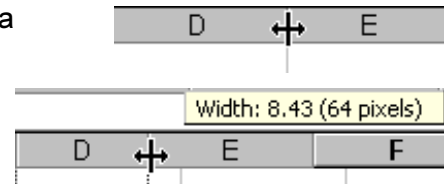
Choose **Format|Row|AutoFit** or **Format|Column|AutoFit** to automatically fit a cell to the largest entry in the row or column. This change will affect the entire row or column.

To Change Column Width and Row Height without using the Format menu:

1. Place the mouse on the line between the column or row headers of the column or row to format (e.g., in order to AutoFit column D place the mouse on the line between the column D and E headers)

2. The mouse pointer will change into a line with a double-headed arrow.

3. Click and drag the symbol to the desired height or width to adjust the size or double click the mouse button to AutoFit the entire row or column.

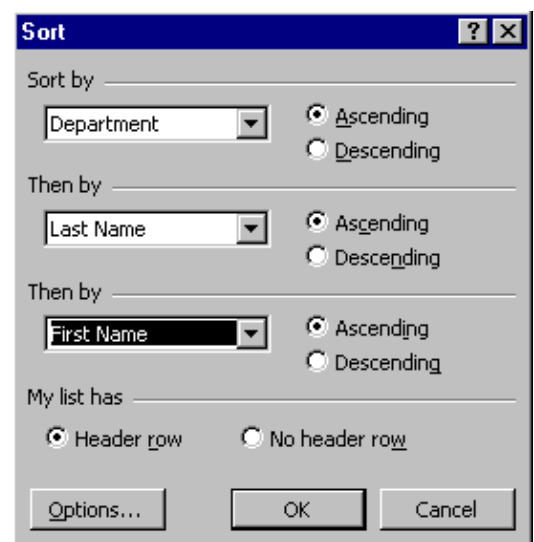
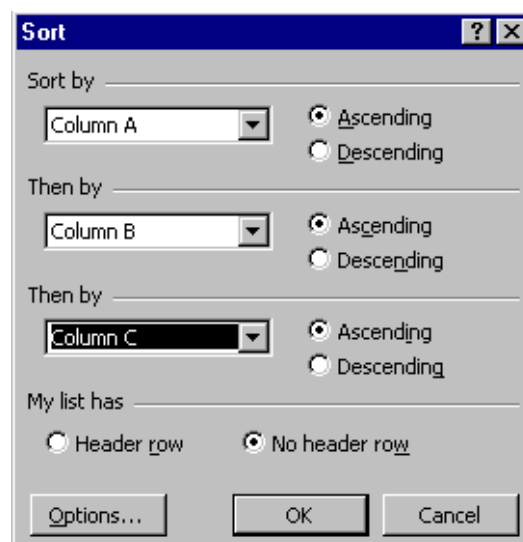


Sorting

This function alphabetizes or numerically sorts data in an **ascending** or **descending** order. The sort command can arrange:

- Numbers
- Text (text with or without numbers)
- Logical values
- Error values
- Blanks

Highlight the cells which contain the data to be sorted and select **Data|Sort**. The **Sort** dialog window will appear with three categories to customize the sort:



1. Sort By

Enables the choice of the primary sorting criteria. The column can be sorted in either descending or ascending order.

Ascending: The lowest number or beginning letter of the alphabet will appear first.

Descending: The highest number or end of the alphabet will appear first.

2. Then By

This command follows the initial sort. These fields specify a secondary or tertiary criteria in case duplicate records are found.

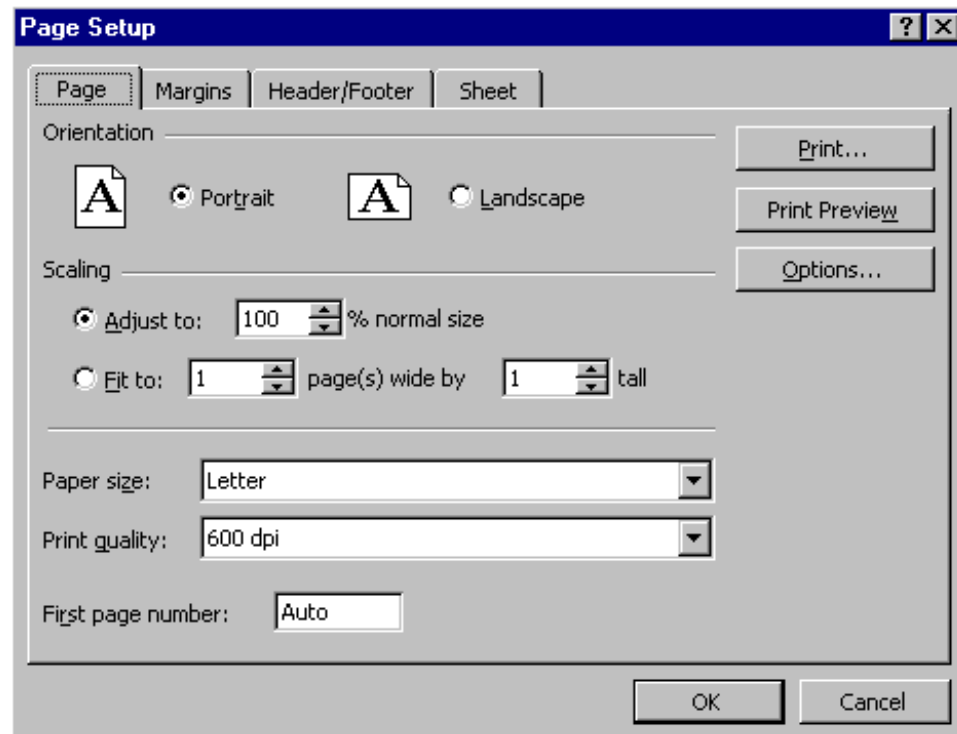
3. My List Has

If the highlighted area has column labels, select the **Header Row** option. If the area has no labels then select the **No Header Row** option. The purpose for this box is to determine whether the first row of your list is excluded or included when the data is sorted. Having header rows will also make the column label appear in the pull down menus. This is shown in the screen shot on the right.

Adjusting Page Setup

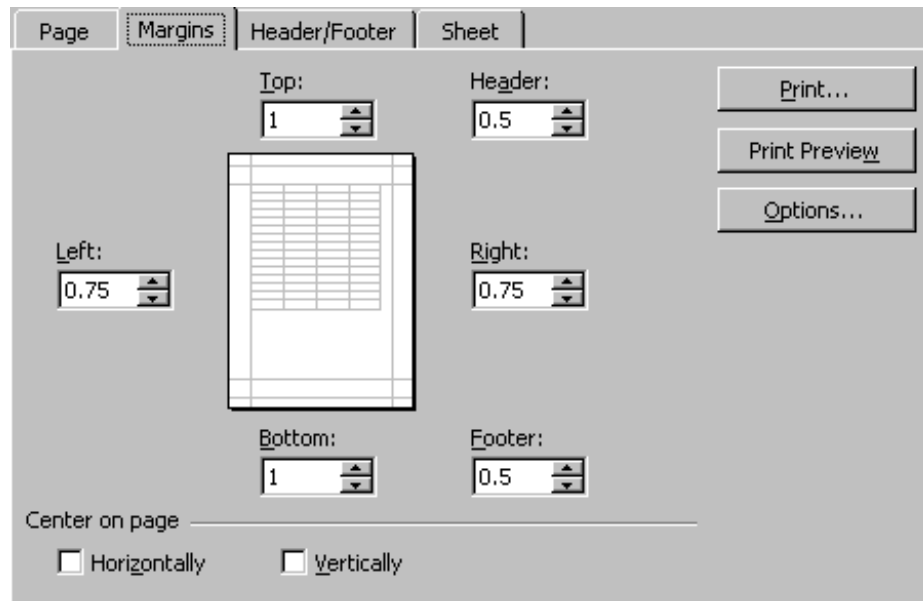
Landscape or Portrait

Excel by default prints the worksheet in the portrait orientation. To change between landscape and portrait, select **File|Page Setup** and select the **Page** tab. Choose the option for the desired orientation.



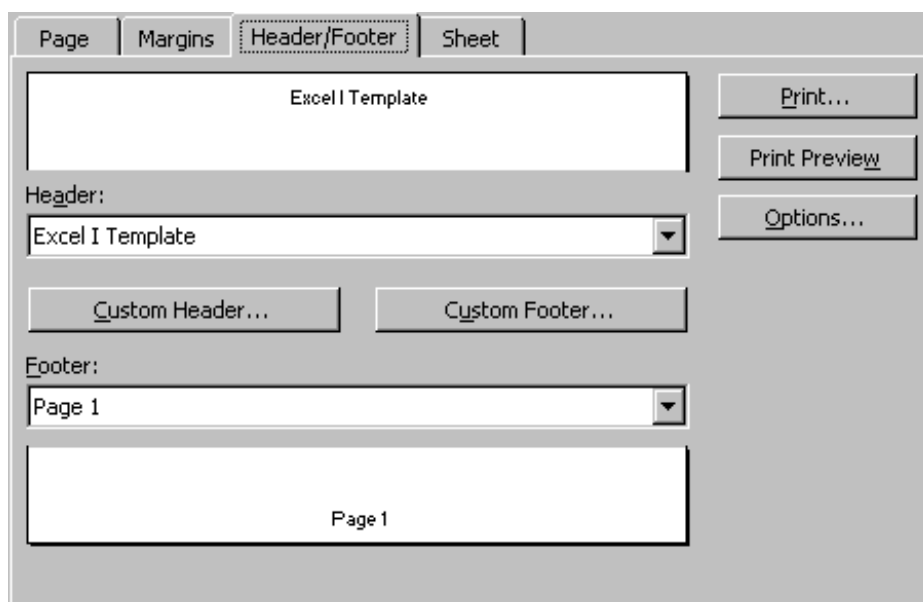
Margin

To change margin settings, select **File|Page Setup** and select the **Margins** tab. Adjust the values for the margins on each side of the page to the desired amount.



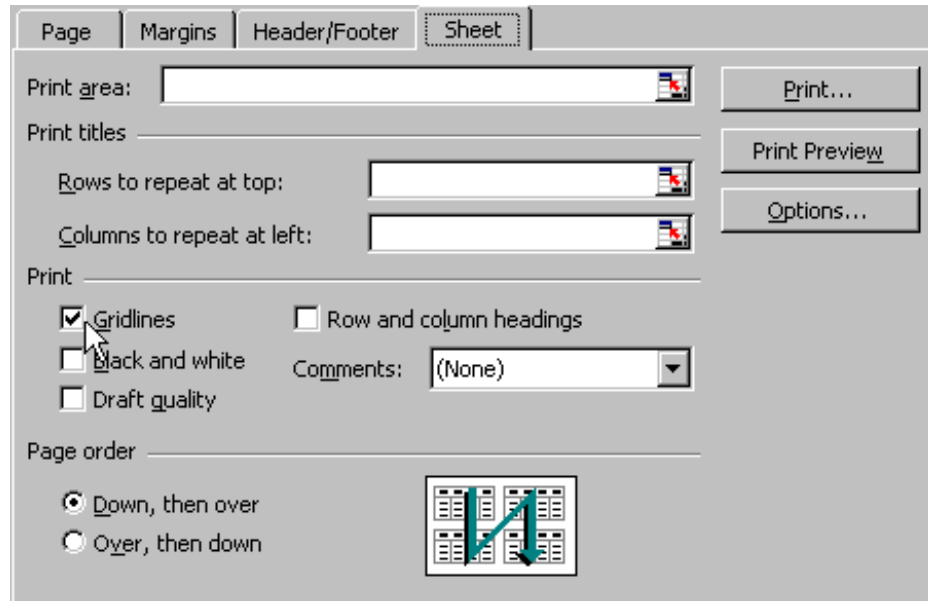
Header and Footers

By default, Excel prints the sheet name at the top of each page and the page number at the bottom of each page. To change this, choose **File|Page Setup** and select the **Header/Footer** tab. Next to **Header:** and **Footer:** there is a pull-down menu with a list of standard header and footer options. Click on the **Custom Header** or **Custom Footer** buttons to create a personalized header or footer.



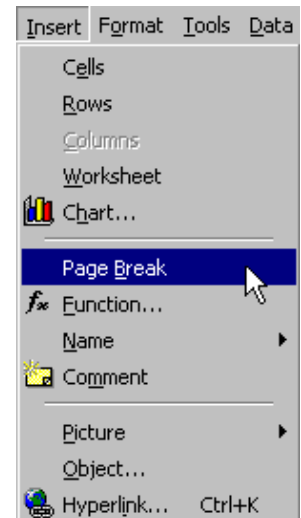
Removing Gridlines

Excel may be set up to print the gridlines that appear on screen in a worksheet. To remove gridlines on the printed copy, choose **File|Page Setup...** and select the **Sheet** tab. Check or uncheck the **Gridlines** box to adjust the setting.



Setting Page Breaks

Highlight the row that will appear at the top of the new page. Select **Insert|Page Break** to insert a page divider. A dotted line will appear above the current row, representing the page-divider.



Printing

Worksheet or Workbook

To print any worksheet choose **File|Print...**

Choose between printing a selection of the worksheet, the current worksheet, or the entire workbook. Use **Print Preview** to see how the document will look before printing.

Printing a selection of the worksheet

Highlight the cells to print on the worksheet and select **File|Print...**. In the dialog box, select **Print Selection**. Only the highlighted cells will print.

