


## Excel 2007 - Beginning

103-123

### Excel Basics

Notes	Activity
<p><b>Quick Links</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Starting Excel</a> Pages OFF 3 – OFF 5 EX 3</li> <li>• <a href="#">Opening an Existing File</a> Pages OFF 21 - 22</li> <li>• <a href="#">Excel Window Components</a> Pages OFF 5 EX 3 – EX 5</li> <li>• <a href="#">Spreadsheet Concepts</a> Pages EX 4 – EX 5</li> <li>• <a href="#">Office Button</a> Pages OFF 18 - 22</li> <li>• <a href="#">Quick Access Toolbar</a> Pages</li> <li>• <a href="#">The Ribbon</a> Pages OFF 10 – 14</li> <li>• <a href="#">View Buttons</a> Pages EX 41 – EX 42</li> <li>• <a href="#">Zoom Controls</a> Pages OFF 8 – OFF10</li> <li>• <a href="#">Changing Active Cell</a> Pages EX 6 – EX 7</li> <li>• <a href="#">Scrolling a Worksheet</a> Page EX 7</li> <li>• <a href="#">Managing Worksheets</a> Pages EX 7 – EX 8 Pages EX 35 – EX 36</li> <li>• <a href="#">Selecting A Range</a> Pages EX 22 – EX 23</li> <li>• <a href="#">Entering Labels</a> Pages EX 10 – EX 13</li> <li>• <a href="#">Entering Data</a> Pages EX 9 – EX 15</li> <li>• <a href="#">Editing Cell Contents</a> Pages EX 36 – EX 37</li> <li>• <a href="#">Deleting Cell Contents</a> Pages</li> <li>• <a href="#">Undo / Redo</a> Page EX 37 – EX 38</li> <li>• <a href="#">Entering Formulas</a> Pages EX 27 – EX 31</li> <li>• <a href="#">Using Functions</a> Pages EX 31 – EX 34</li> <li>• <a href="#">Copying Formulas</a> Pages EX 30 – EX 31 Pages EX 132 – EX 133</li> <li>• <a href="#">Resizing Rows &amp; Columns</a> Pages EX 15 – EX 18</li> <li>• <a href="#">Insert Rows &amp; Columns</a> Pages EX 18 – EX 20</li> <li>• <a href="#">Deleting Rows &amp; Columns</a> Page EX 20</li> <li>• <a href="#">Moving Cells</a> Pages EX 24 – EX 26</li> <li>• <a href="#">Spell Checking</a> Pages EX 39 – EX 40</li> <li>• <a href="#">Saving a Workbook</a> Pages OFF 18 – 21</li> <li>• <a href="#">Printing Worksheets</a> Pages EX 40 – EX 46</li> <li>• <a href="#">Getting Help</a> Pages OFF 23 – 27</li> <li>• <a href="#">Exiting Excel</a> Pages OFF 28 - 29</li> </ul>	<p><b>Copy College Math Final Exam Analysis.xlsx from the I: drive.</b></p> <p> This icon designates a video is available as an additional reference. Video DVD is available in the Stevens Point library.</p>

Notes	Activity
<b>Starting Excel</b> <ul style="list-style-type: none"><li>• Icon on Desktop</li><li>• Start Menu</li><li>• Using a document</li><li>• If Excel is not on the Desktop or the Start Menu<ul style="list-style-type: none"><li>➤ Using My Computer, navigate to: C:\Program Files\Microsoft Office\Office 12\Excel.exe</li><li>➤ <u>Right</u>-drag the file to your Desktop or Start Menu and choose Create Shortcut from the popup menu</li></ul></li></ul>	<p>Start Excel from the Start menu.</p> <p>Close Excel</p>
<b>Opening an Existing Workbook</b> <ul style="list-style-type: none"><li>• Once you've saved a workbook, you can open it again at a later time for editing</li><li>• There are a number of equally effective ways to do this.<ul style="list-style-type: none"><li>➤ Use My Computer, locate the workbook file, double-click its icon</li><li>➤ Click the Windows Start button, choose My Recent Documents, click the workbook (if it's on the list)</li><li>➤ Open Excel. Click the Office Button, select the workbook from the Recent Documents list (if it's on the list)</li><li>➤ Open Excel. Click the Office Button. Click Open. Locate the workbook using the Open dialog box.</li></ul></li></ul>	<p>Open Sample.xlsx</p>
<b>A Tour of the Excel Screen</b> <ul style="list-style-type: none"><li>• Title Bar</li><li>• Office Button</li><li>• Quick Access Toolbar</li><li>• Ribbon</li><li>• Help Button</li><li>• Status Bar</li><li>• View buttons</li><li>• Zoom Controls</li><li>• Row and Column Headers</li><li>• Active Cell indicator</li><li>• Sheet Tabs</li><li>• Formula Bar</li><li>• Scroll Bars</li></ul>	<p>Point out all items</p>

Notes	Activity
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## Spreadsheet Concepts



### Excel 1: Understanding Spreadsheets



- Excel is not the only spreadsheet program out there. All spreadsheet programs share some basic concepts.
- Purpose of spreadsheets:
  - Store data and formulas to manipulate that data.
  - Support *what if* analysis of data.
  - Create charts to view data graphically
- Worksheet: one *page* of data and formulas. The sheet tabs allow you switch between worksheets. Excel can only display one worksheet at a time
- Workbook: a collection of related worksheets. One Excel file contains an entire workbook.
- Rows and Columns: Worksheets are laid out in rows and columns. Each Excel 2007 worksheet has over a million rows and 16,000 columns. Columns are labeled using letters; rows are labeled using numbers.
- Cell: Cells are the basic building blocks of a worksheet. Each intersection of a row and column is a cell. Each cell contains a piece of data or a formula that does a calculation based on other cells' contents.
- Cell Reference (cell address). Each cell is referenced by first including the cell's column letter and then its row number (E.g. A1, FF356, B7)
  - In relation to cell references, Excel is case **insensitive**—you can enter column letters in upper or lower case.
- Active Cell: In Excel, the active cell is designated with a dark border. The active cell is the cell whose data value or formula you are editing.
- Formula Bar. The formula bar displays the contents of the active cell (data or a formula). It appears below the Ribbon, just above the column headers.
- Formula: The real power of spreadsheets comes from cells that contain formulas. Formulas are mathematical equations that usually (but not always) reference data values in other cells (using cell references). See the example to the right.

Switch to the Chart sheet.  
Switch back to the  
Analysis sheet

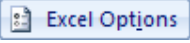
Make F5 the active cell

Change Diane's last test  
score to a 94. Note change  
in Average

<i>f<sub>x</sub></i>	=B1+C2	
	D	E

Notes	Activity
<p data-bbox="256 310 617 367"> Office 2007: Getting Started</p> <p data-bbox="199 388 470 430"><b>Office Button</b> </p> <ul data-bbox="248 451 1047 1602" style="list-style-type: none"><li>• New<ul style="list-style-type: none"><li>➤ Displays the New Workbook dialog box.</li><li>➤ Allows you to create new Excel workbooks of varying types</li></ul></li><li>• Open<ul style="list-style-type: none"><li>➤ Displays the Open dialog box.</li><li>➤ Allows you to open an existing workbook.</li></ul></li><li>• Save<ul style="list-style-type: none"><li>➤ Allows you to save changes to the current workbook.</li><li>➤ There is also a Save button on the Quick Access toolbar</li></ul></li><li>• Save As<ul style="list-style-type: none"><li>➤ Displays the Save As dialog box.</li><li>➤ Allows you to save the current workbook with a different name, or in a different location, or as a different file type.</li></ul></li><li>• Print<ul style="list-style-type: none"><li>➤ Displays the Print dialog box.</li><li>➤ Allows you to print the current worksheet or a part of that worksheet.</li></ul></li><li>• Prepare<ul style="list-style-type: none"><li>➤ Allows you to <i>prepare</i> the workbook for distribution to other people.</li></ul></li><li>• Send<ul style="list-style-type: none"><li>➤ Allows you to send the workbook via email.</li></ul></li><li>• Publish<ul style="list-style-type: none"><li>➤ Allows you to post the workbook to a blog.</li></ul></li><li>• Close<ul style="list-style-type: none"><li>➤ Closes the current workbook.</li><li>➤ If the workbook has not been saved, you will be provided the opportunity to do so.</li></ul></li></ul>	 <p>The image shows the Office Button menu in Microsoft Excel 2007. It is a vertical list of icons and text labels. From top to bottom, the items are: 'New' (document icon), 'Open' (folder icon), 'Save' (floppy disk icon), 'Save As' (floppy disk icon with a pencil), 'Print' (printer icon), 'Prepare' (document with checkmark icon), 'Send' (envelope icon), 'Publish' (folder with up arrow icon), and 'Close' (folder with down arrow icon). Each item has a small right-pointing arrow next to the text label.</p>

Notes	Activity
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- Recent Documents
  - Allows you to quickly open documents (workbooks) you have worked on recently.
- Excel Options 
  - Replaces Tools ► Options
  - Allows you to customize the way Excel looks and behaves

### Quick Access Toolbar

- Provides quickest access to commonly used commands
- Initially includes:
  - Save
  - Undo
  - Redo
- Can be customized using the dropdown arrow on the right

### The Ribbon

- Replaces menus from previous versions of Excel
- Provides toolbars to access most of the program's features.
- Divided into groups using tabs
  - With experience, you'll learn which tabs contain which features
  - Simply click a tab to see the features it provides
  - Home tab contains the most commonly used features

Notes	Activity
<ul style="list-style-type: none"> <li>Click a button icon to implement that feature</li> <li>Some buttons include a <i>button arrow</i> that displays a list of choices</li> <li>Most tabs include groups of related features. Most groups include a <i>dialog box launcher</i>  that provides all the features for that group including some that aren't on the ribbon <ul style="list-style-type: none"> <li>Small button  located to the right of the group name at the bottom of the ribbon.</li> </ul> </li> <li>You'll get a lot of experience using the Ribbon throughout the course.</li> </ul>	<p>Click button arrow next to background color</p> <p>Click the Font dialog box launcher</p>
<ul style="list-style-type: none"> <li><b>Power Tip:</b> To increase the amount of workspace in the Excel window, you can temporarily collapse or minimize the Ribbon. <ul style="list-style-type: none"> <li>Double-click any Ribbon tab</li> <li>Then simply click any Ribbon tab to display its groups.</li> <li>When you click a Ribbon button, the Ribbon automatically hides again.</li> <li>Double-click any tab to permanently display the Ribbon again.</li> <li>You can also minimize the Ribbon by right-clicking it and choosing Minimize Ribbon from the popup menu</li> </ul> </li> </ul>	<p>Minimize and restore the Ribbon</p>
<h3>View Buttons </h3> <ul style="list-style-type: none"> <li>Excel has the ability to display a worksheet in three different <i>views</i>.</li> <li>By default, Excel displays in <i>Normal</i> view <ul style="list-style-type: none"> <li>Worksheet displays as one large worksheet with no breaks</li> </ul> </li> <li>Page Layout displays the workbook as it will print including all blank page margins</li> <li>Page Break Preview shows the location of the page breaks without showing the margins</li> </ul>	<p>Which between the various views.</p> <p>Return to Normal view</p>

Notes	Activity
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## Zoom Controls



Experiment with the various zoom techniques

- The zoom controls allow you to zoom in to enlarge the text (all document objects actually) or zoom out to shrink the document objects so you can see more of the document (including multiple pages) at once.
- To change zoom
  - Click the + or – button. Each click changes the zoom by 10%
  - Drag the zoom arrow left or right
  - Click anywhere on the zoom line to move the zoom arrow to that position
    - This is a quick way to return to 100% zoom
  - Click the percentage indicator (the number) to open the Zoom dialog box
- **Power Tip:** You can also change the zoom by moving the mouse wheel **while holding down the Ctrl key**.

## Moving in a Worksheet (Change Active Cell)

Practice moving around the worksheet and using shortcut keys.

- The easiest way to change the active cell is to simply click on that cell.
- You can quickly jump to a cell by entering its cell reference in the Name box (to the left of the formula bar)
  - Normally only used for very large worksheets
- Keyboard shortcuts
  - Ctrl-Home moves to cell A1
  - Home moves to column A of the current row
  - Ctrl-End moves to the last cell (lower right) that contains data or a formula
  - Arrow keys move one cell in the designated direction
  - Ctrl-Page Up or Ctrl-Page Down move to the previous or next worksheet

## Notes

## Activity

## Scrolling a Worksheet

- Some worksheets are larger than one screen, so you'll have to *scroll* through the worksheet to see and work on different parts.
- The scrollbar on the right side of the screen makes scrolling easy.
  - Click the arrows at the top or bottom of the scrollbar to scroll in that direction
    - You can click **and hold** on the button to continuously scroll
  - Drag the *scroll box* up or down to quickly move to a new location. The screen will scroll as you drag.
  - Click above or below the scroll box to move up or down one screen of information.
- **NOTE:** Scrolling the screen DOES NOT move the active cell.
  - After you scroll to the appropriate location in the worksheet, you still need to click where new current cell.
  - If you don't click, as soon as you start typing, the screen will scroll to display the location of the current cell.
- If the worksheet is wider than one screen, use the horizontal scrollbar (located to the right of the sheet tabs) to scroll left and right.




Practice scrolling. Note the insertion point does not move.


## Managing Worksheets


- Excel can only display one worksheet (of a workbook) at a time—only one sheet can be the active sheet.
- To display a different worksheet, simply click the worksheet's tab
  - Ctrl-Page Up and Ctrl-Page Down switch to the previous or next worksheet
- Sheet names are generic. To give them more appropriate names (rename the worksheet), double-click the worksheet tab and then type the new name.
  - You can also rename the worksheet by right-clicking the worksheet and choosing Rename from the menu

Rename Sheet 2 to Sample



Notes	Activity
<ul style="list-style-type: none"><li>By default, Excel creates 3 worksheets in a new workbook. To <b>delete</b> unneeded worksheets, right-click the worksheet tab and choose Delete from the menu<ul style="list-style-type: none"><li><b>Tip:</b> you can change how many sheets Excel creates for a new workbook by choosing Excel Options under the <a href="#">Office button</a> and changing the value for <b>Include this many sheets:</b></li></ul></li></ul>	<b>Delete Sample sheet</b>
<ul style="list-style-type: none"><li>To rearrange (move) sheets, simply drag the sheet tab to a new location. A small black arrow (▼) will appear to show where the new location will be.</li></ul>	<b>Make the chart sheet the first sheet</b>
<ul style="list-style-type: none"><li>To add a new sheet to the workbook, click the Insert Worksheet  button (after the last tab). Then, rename and move the new sheet to the appropriate position.<ul style="list-style-type: none"><li>Alternatively, you can insert the sheet in its appropriate position. Right-click the sheet tab the new sheet should precede (will insert before) and choose Insert from the menu. Choose worksheet from the dialog box. Rename the sheet.</li></ul></li></ul>	<b>Insert a new sheet Documentation as the first sheet.</b>
<ul style="list-style-type: none"><li>To make sheets more visible it sometimes help to change the sheet tab color. Right-click the worksheet tab and choose Tab Color from the menu.<ul style="list-style-type: none"><li>The sheet will appear mostly white when it is the active sheet, but a solid color when it is not the active sheet.</li></ul></li></ul>	<b>Change the background color of the Chart sheet.</b>



Notes	Activity
<p><b>Selecting Cells</b></p> <ul style="list-style-type: none"><li>• To copy, delete, format, etc. cells you'll often want to select more than one cell at a time.</li><li>• Selecting a <i>range</i> of cells<ul style="list-style-type: none"><li>➤ A range of cells are a connected, rectangular group of cells</li><li>➤ Place your mouse pointer in the middle of the top, left cell (make sure the pointer is a white, plus symbol ) and drag to the lower right cell</li><li>➤ Alternatively, click in the top, left cell, then Shift-click in the bottom, right cell</li><li>➤ Alternatively, to select an entire row or column, simply click the row number or column letter</li><li>➤ (Advanced) To select only cells containing data (in a range), click the top, left cell, then hold the Shift key and double-click any edge of the cell. Excel will select all cells in that direction up to the first blank cell. Repeat the Shift-double-click to expand the selection.</li></ul></li><li>• Excel designates a range of cells (in the formula bar) by listing the upper-left cell reference of the range followed by a colon, followed by the lower-right cell reference.<ul style="list-style-type: none"><li>➤ Example: A1:E5</li></ul></li><li>• Select a <i>collection</i> (nonadjacent range) of cells<ul style="list-style-type: none"><li>➤ A collection of cells is a group of cells that are not connected or form a shape that is not rectangular</li><li>➤ Select the first cell(s) in the collection, then hold down the Ctrl key while you select the other cells of the collection.</li></ul></li></ul>	<p>Practice selecting ranges and collections of cells</p> <p>Close Sample</p>

Notes	Activity
<h2 data-bbox="199 233 456 268">Entering Labels</h2> <p data-bbox="250 296 631 348">  Excel 1:Planning a Workbook         </p> <ul style="list-style-type: none"> <li>• Basic Excel spreadsheets are made up of three components: labels, data and formulas</li> <li>• Labels are used to describe the data that is entered in the worksheet</li> <li>• Labels are often referred to as <i>row and column headings</i> or <i>titles</i></li> <li>• Labels are almost always text</li> <li>• To enter a label             <ul style="list-style-type: none"> <li>➤ Make the appropriate cell the active cell (click in it)</li> <li>➤ Type the text you wish to use as the label                 <ul style="list-style-type: none"> <li>– The text will appear in both the active cell and the formula bar</li> <li>– The formula bar always displays what's stored in the active cell</li> </ul> </li> </ul> </li> <li>➤ Labels that don't fit in a cell automatically spill over into the next cell <b>as long as that cell is empty</b></li> <li>➤ The entire text of label is stored in cell even if not shown on worksheet                 <p data-bbox="362 1073 1036 1171"><b>What is stored in a cell is not necessarily what is displayed. The formula bar will also show what is stored in a cell</b></p> </li> <li>➤ As you fill in data in columns, AutoComplete automatically tries to anticipate repeated values.                 <ul style="list-style-type: none"> <li>– Not much value, just ignore it (Tammy anticipated when typing Tina's name)</li> </ul> </li> <li>➤ Press Alt-Enter to insert multiple lines into one cell (cell wrapping)</li> </ul>	<p data-bbox="1076 233 1373 268">Open a new workbook.</p> <p data-bbox="1076 306 1430 373">Save the workbook as Final Exam Analysis.xlsx</p> <p data-bbox="1076 926 1430 1100">           Enter College Math Final Exam Analysis in cell A1.            Note how spills over.            Enter student's name in B1.            Undo         </p> <p data-bbox="1076 1146 1349 1182">Enter all other labels.</p>

[illegible]

Notes	Activity
<ul style="list-style-type: none"> <li>• To enter date data           <ul style="list-style-type: none"> <li>➤ Make the appropriate cell the active cell</li> <li>➤ Type the date</li> <li>➤ After pressing Enter, the date appears right aligned.</li> <li>➤ Excel recognizes just about any format of date               <ul style="list-style-type: none"> <li>– Most dates are automatically reformatted into m/d/yyyy (5/1/2007) format                   <ul style="list-style-type: none"> <li>▪ In the next tutorial, you'll learn how to specify the date format</li> </ul> </li> <li>– <b>Tip:</b> You don't have to enter the year. If you don't enter it, Excel automatically inserts the current year.</li> </ul> </li> <li>➤ If a date (including its formatting) is too big to display in the cell, Excel will display #####               <ul style="list-style-type: none"> <li>– Widen the column (see below) until the complete date displays.</li> </ul> </li> <li>➤ Excel stores dates as numbers (1/1/1900=1) so you can create formulas based on dates.</li> <li>➤ Though used less often, Excel can also store time data               <ul style="list-style-type: none"> <li>– Enter data as hh:mm:ss a/p</li> <li>– When entering times :ss (seconds) is optional</li> <li>– When entering times you must provide either the minutes :mm OR the a/p (am or pm)</li> <li>– If you enter a time without a/p, Excel assumes the time is based on a 24-hour clock</li> <li>– If you enter the a/p (a or p), you must precede it with a space</li> </ul> </li> </ul> </li> </ul>	<p>Enter dates and times in various formats, checking the formula bar after each one and then undoing after each one (to remove formatting).</p>

Notes	Activity
<p><b>Editing Cell Contents</b></p> <ul style="list-style-type: none"> <li>• While you are entering labels or data into a cell, you can use the Delete, Backspace or arrow keys to edit the cell contents</li> <li>• After you have left the cell, before you can edit its data, you need to enter <i>editing mode</i>. <ul style="list-style-type: none"> <li>➤ Technique 1 <ul style="list-style-type: none"> <li>– Click the cell to make it the active cell</li> <li>– Edit the contents in the formula bar (cell edit is not available)</li> </ul> </li> <li>➤ Technique 2 <ul style="list-style-type: none"> <li>– Double-click the cell that needs editing</li> <li>– Edit the contents either in the cell or in the formula bar</li> </ul> </li> <li>➤ Technique 3 <ul style="list-style-type: none"> <li>– Click the cell, then press the F2 key (if the cell is already the active cell, simply press F2)</li> <li>– Edit the contents either in the cell or in the formula bar</li> </ul> </li> </ul> </li> </ul>	<p><b>Highlight B5 to D8</b> Enter scores and note what happens when press Enter</p> <p>Edit the semester, change the year.</p>
<p><b>Deleting Cell Contents</b></p> <ul style="list-style-type: none"> <li>• Occasionally, you'll need to erase the contents of the cell</li> <li>• Click the cell to make it the active cell <ul style="list-style-type: none"> <li>➤ If the cell to be cleared is already the active cell, press Esc to cancel editing mode (if necessary)</li> </ul> </li> <li>• Press the Delete key on the keyboard</li> <li>• You can also use <a href="#">cell editing</a> techniques to clear a cell, but the above technique is generally quicker.</li> <li>• When you clear (delete) cell contents, the formatting remains. <ul style="list-style-type: none"> <li>➤ Use Clear (Editing Group of the Home tab) to clear both the data and the formatting (Clear All)</li> </ul> </li> </ul>	<p>Enter \$15,000 in cell A20</p> <p>Delete</p> <p>Enter 1000</p> <p>Clear All</p> <p>Enter 1000</p> <p>Undo</p>

Notes	Activity
<p><b>Undo and Redo</b></p> <ul style="list-style-type: none"><li>• Excel has multiple levels of undo<ul style="list-style-type: none"><li>➤ Most everything you do can be undone<ul style="list-style-type: none"><li>– Print and Save are a couple of exceptions</li></ul></li><li>➤ Excel remembers all changes you have made and allows you <i>rewind</i> to undo those changes.<ul style="list-style-type: none"><li>– You must undo changes sequentially. You cannot undo a change made 15 minutes ago without first undoing all the other changes you've made since then.</li></ul></li><li>➤ Caution: once you close a document, Excel forgets the changes you made previously.<ul style="list-style-type: none"><li>– If you save without closing, you can still undo.</li></ul></li><li>➤ To undo, click the Undo button  on the Quick Access toolbar<ul style="list-style-type: none"><li>– Alternatively, you can use my favorite shortcut key: Ctrl-Z</li></ul></li></ul></li><li>• If you accidentally undo (rewind) too many changes, you can redo the change (undo the undo)<ul style="list-style-type: none"><li>➤ To redo, click the Redo button  on the Quick Access toolbar.</li><li>➤ I find I use Redo a lot less than Undo</li></ul></li></ul>	<p>Highlight a sentence (Ctrl-click). Delete, undo, redo</p>

Notes	Activity
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## Entering Formulas



### Excel 1: Working with Formulas

- Formulas provide the real power of spreadsheets. Formulas automatically update (if you enter them properly) whenever the data they are based on change.
- All formulas start with an equal sign ( = )
- Normally, formulas reference other cells in the worksheet (or workbook) that contain data
- Mathematical operators the formula instruct Excel how to process the data
  - + - \*(multiplication) / (division) ^ (exponentiation)

Example: =A5+C7\*D3

- Order of precedence
  - All computers do math in a particular order: some operators are processed before others
    - Parts of formulas surrounded by parenthesis are processed first
    - Exponentiation is processed next
    - Multiplication and division are processed next
    - Finally, addition and subtraction are processed
  - In the example above, C7 is first multiplied by D3 and then A5 is added to that result.
  - If two operators in an equation have the same order of precedence, they are processed left to right

A5 / C7 \* D3 (A5 / C7 is processed first)



Enter formula for E5  
=B5+C5+D5

Enter formula for F5 using  
point and shoot  
=B5+C5+D5/3 note error.

Edit formula. Add  
parenthesis



Notes	Activity
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- To enter a formula:
  - Technique 1 (*point 'n shoot*)
    - Make the cell that is to display the formula's result the active cell
    - Type the equal sign ( = )
    - Point to the first cell to be referenced in the formula and click it. Excel will automatically enter the cell reference in the formula
    - Type the operator
    - Point to the next cell to be referenced and click it
    - Repeat, typing all operators (and parenthesis) and clicking on cells
    - To finalize the formula, press Enter or click the check mark  to the left of the formula bar.
  - Technique 2
    - Make the cell that is to display the formula's result the active cell
    - Type the equal sign ( = )
    - Type the formula: cell references, operators and parenthesis
    - To finalize the formula, press Enter or click the check mark  to the left of the formula bar.
    - This technique is a little more error prone than Technique 1
  - You can mix the two techniques, using *point 'n shoot* to enter some cell references and manually typing other cell references.
  - If you make a mistake when entering the formula, Excel will display an error message.
    - Often, Excel will make a suggestion as to how to correct the formula. Accept the suggestion if appropriate.
    - If there is no suggestion or the suggestion is not appropriate, you'll have to determine the problem and correct it.



Notes	Activity
<ul style="list-style-type: none"><li>• After you finalize the formula, Excel displays the result of the formula in the cell.<ul style="list-style-type: none"><li>➤ If you want to see the formula, make the cell the active cell and the formula will appear in the formula bar.</li><li>➤ You'll learn how to format the results in the next tutorial.</li></ul></li><li>• Edit a formula in the same way you <a href="#">edit cells</a> containing data</li></ul>	<b>Note difference in displayed cell contents and formula bar.</b>


## Using Functions



### Excel 1: Introducing Functions

- Excel includes hundreds (thousands?) of built-in functions—pre-defined mathematical formulas.
- A function is made up of two parts
  - The function name (e.g. SUM, AVERAGE, PMT)
  - Parenthesis followed by *parameters*
    - Parameters are cell references referring to the data the function should use to calculate its result)
- Some functions are used so often that Excel has made them almost *automatic*.
  - We'll use these in this unit
  - In future tutorials, you'll learn to use other, more advanced functions.

Notes	Activity
<ul style="list-style-type: none"><li>• The most commonly used function is the SUM function<ul style="list-style-type: none"><li>➤ The SUM function adds up all the values in a <a href="#">range</a> of cells</li></ul></li><li>• To enter a formula using the SUM function<ul style="list-style-type: none"><li>➤ Make the cell that is to display the formula's result the active cell</li><li>➤ Click the AutoSum  button in the Editing group of the Home tab<ul style="list-style-type: none"><li>– You do not need to type the equal sign—the <i>auto</i> functions insert them automatically.</li><li>– The <i>auto</i> functions also automatically insert the function name and the required parenthesis</li></ul></li><li>➤ Excel will look <b>above</b> the cell to see if those cells contain data (because totals often appear below the values they are based on). If there are no numbers above the <i>total</i> cell, Excel looks for numbers to the <b>left</b> of the cell (often totals appear to the right of the values they are based on).<ul style="list-style-type: none"><li>– If Excel finds numbers to above or to the left, it automatically selects all the numbers it finds and adds a reference to that range of cells to the SUM function.</li><li>– If the range selected is correct, press Enter (or click ) to accept the formula</li></ul></li></ul></li><li>• If no values exist above or to the left of the <i>total</i> cell or if the range automatically selected by Excel is incorrect, you'll have to designate the correct range of cells manually.<ul style="list-style-type: none"><li>➤ Using the mouse, drag over the correct range of cells. As you drag, Excel will insert the reference for the range you select into the function's parenthesis.</li></ul></li><li>• You could, of course, type the formula with its function manually, but this is much more prone to errors and you'll have to know the details of the function requirements.</li></ul>	<p>Delete Total Points formula Use AutoSum to calc Total Points</p>

Notes	Activity
<ul style="list-style-type: none"><li>• In addition to the SUM function, Excel also includes <i>auto-functions</i> for AVERAGE, MIN (minimum value), MAX (maximum value), and COUNT.<ul style="list-style-type: none"><li>➤ To use these functions, click the drop-down arrow next to the AutoSum , select the appropriate function, and follow the procedure described above for selecting the appropriate range of cells.</li></ul></li><li>• <b>Tip:</b> If you want to see the total, average or count of the numbers in a range of cells <b>without</b> including the result in the worksheet, select the range of cells. Excel automatically displays the total, average and count in the status bar at the bottom of the screen.</li></ul>	<p>Use AutoSum to calculate Average, Min, Max for Test 1. Note adjustments needed.</p> <p>Highlight Test 3 scores. Note statistics in status bar.</p>

## Notes

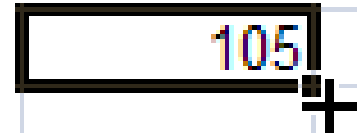
## Activity

## Copying Formulas






### Excel 3: Understanding Cell References



- Frequently, you'll want to apply the same formula to multiple columns or rows of data.
  - For example, after calculating the total of values for column (data for January perhaps), you'll want to calculate the formula for all the other months as well.
- Excel makes copying formulas extremely easy.
  - Enter the formula to be copied using the techniques described above.
  - Excel includes a *fill handle* (a black square) in the lower right corner of the active cell. The fill handle allows you to quickly copy a cell's contents by dragging it with the mouse.
  - When you point to the fill handle, the mouse pointer changes shape to a + sign.
  - Drag the fill handle to select the cells that are to receive the copies of the formula
- Note that when you copy a formula Excel automatically updates the cell references in the formulas to correspond to the data the formula applies to.
  - If the formula in cell A11 is = SUM(A1:A10) and you copy this formula to B11, Excel automatically updates the formula to = SUM(B1:B10)
  - If the formula in cell F10 is =SUM(A10:E10) and you copy this formula to F11, Excel automatically updates the formula to =SUM(A11:E11)
  - Excel accomplishes this by using what's called *relative references*. Excel updates copied formulas references based on their location *relative* to the original formula.
    - We'll investigate this further in a future tutorial




Copy the Total Points and Average formulas at once. Note the changes in formulas.

Notes	Activity
<ul style="list-style-type: none"><li>● As the book describes, you can also copy formulas using the clipboard.<ul style="list-style-type: none"><li>➤ Using the fill handle is often more convenient.</li><li>➤ Enter the formula to be copied.</li><li>➤ Right-click the cell containing the formula and choose Copy from the menu<ul style="list-style-type: none"><li>– Or use Ctrl-C or the Copy button in Clipboard group of the Home tab</li></ul></li><li>➤ Select the cell(s) to receive the copies<ul style="list-style-type: none"><li>– You can copy to multiple cells at once</li></ul></li><li>➤ Right-click the selected range of cells and choose Paste from the menu<ul style="list-style-type: none"><li>– Or use Ctrl-V or the Paste button in the Clipboard group of the Home tab</li></ul></li><li>➤ The copied cell references will be updated as they are when you copy using the fill handle.</li></ul></li></ul>	<p>Copy the three test statistics (B12:B14) to C12:D14 using the clipboard.</p> <p>Enter test scores for Tina. Note Excel automatically updates statistics formulas and copies Total Points and Average formulas</p>

Notes	Activity
<p><b>Resizing Rows and Columns</b></p> <ul style="list-style-type: none"> <li>After entering labels, data and formulas you may discover that some rows and/or columns are too small or too large.</li> <li>To resize a row or column, you first have to designate which row or column to resize. <ul style="list-style-type: none"> <li>➤ Point to the right edge of the column header box. The mouse pointer will change to double-headed arrow.  </li> <li>➤ Point to the bottom edge of the row header box. The mouse pointer will change to a double-headed arrow.  </li> </ul> </li> <li>Excel includes the <i>AutoFit</i> feature which allows you to quickly resize a column or row to fit its contents. <ul style="list-style-type: none"> <li>➤ Once you have designated the row or column to resize (double-headed arrow appears), simply double-click.</li> <li>➤ Excel will adjust the size of the row or column to fit the largest data in the row or column.</li> </ul> </li> <li>You can manually size a row or column as well <ul style="list-style-type: none"> <li>➤ Designate the row or column to resize (double-headed arrow)</li> <li>➤ Drag to the left or right (columns), up or down (rows) to resize the row or column.</li> <li>➤ As you're dragging Excel displays how many characters (and pixels) wide the column or row will be. Though used in the homework assignments, these values have little use in <i>real world</i> applications of Excel.</li> </ul> </li> <li>You can also use the Format  <b>Format</b> button's (Cells Group of the Home tab) Column Width and Row Height options to type in exact width or height measurements. <ul style="list-style-type: none"> <li>➤ The only reason I can think of to do this is to ensure multiple rows or columns are exactly the same height or width.</li> </ul> </li> <li>See the Tip below to resize multiple rows or columns at once.</li> </ul>	<p>AutoFit column E</p> <p>Manually size column A</p> <p>AutoFit row 1 (if 3 lines, widen column A and AutoFit row again)</p> <p>AutoFit columns B:D. Undo</p>


Notes	Activity
<p><b>Inserting Rows and Columns</b></p> <ul style="list-style-type: none"><li>Occasionally, you'll need to add new rows or columns between existing rows and columns that already contain data.</li><li>The key to this is to remember that Windows programs usually <i>insert before</i>. When you insert something, it appears <b>before</b> the currently selected item.</li><li>To insert a new row, point to the row header box of the row the new, blank row should appear <b>before</b>.<ul style="list-style-type: none"><li>The mouse pointer will change shape to a dark black arrow. </li><li>Right-click and choose Insert from the popup menu.</li><li>If you right-click on the row 6 header, the new, blank row will be the new row 6 and all subsequent rows are renumbered.</li></ul></li><li>To insert a new column, point to the column header box of the column the new, blank column should appear <b>before</b>.<ul style="list-style-type: none"><li>The mouse pointer will change shape to a dark black arrow. </li><li>Right-click and choose Insert from the popup menu.</li><li>If you right-click on the column D header, the new, blank column will be the new column D and all subsequent columns are re-lettered.</li></ul></li><li>When you insert new rows or columns, Excel automatically updates all existing formulas to use the new row and column numbers of the cell references they include.</li></ul>	<p>Insert column for Test 4</p> <p>Add label for Test 4</p>




Notes	Activity
<ul style="list-style-type: none"> <li>To insert more than one column or row at once, you'll first have to select multiple rows or columns           <ul style="list-style-type: none"> <li>➤ Point to the row or column that that new rows/columns should come before (mouse pointer changes to an arrow).</li> <li>➤ Drag down (rows) or to the right (columns) to select multiple rows or columns               <ul style="list-style-type: none"> <li>– Excel will insert the same number of blank rows/columns that you select</li> </ul> </li> <li>➤ Right-click and choose Insert from the popup menu</li> <li>➤ <b>Tip:</b> You can also select multiple rows or columns to resize them all at once               <ul style="list-style-type: none"> <li>– Drag or double-click any selected right (column) or bottom (row) edge to resize all the columns or rows at once.</li> </ul> </li> </ul> </li> <li>You can also insert rows and columns using the Insert  button in the Cells group of the Home tab.           <ul style="list-style-type: none"> <li>➤ You don't need to select an entire row or column first to use this button.</li> <li>➤ This button does not include the ability to insert multiple rows or columns.</li> </ul> </li> </ul>	<p>Insert columns (2) for Test 5 and 6</p> <p>Add score for first student. Note Total formula updates but Average doesn't.</p> <p>Copy (fill handle) first score. Note formulas DON'T update. Undo.</p> <p>Type scores for each student.</p> <p>Update all average formulas.</p> <p>Insert a new row for the student (in the middle).</p> <p>Enter data, copy formulas</p>



## Deleting Rows & Columns

Delete columns F & G

- You can also delete rows and columns
- Select the rows or columns to delete
- Right-click in a select row or column header and choose Delete from the popup menu
  - Alternatively, you can click the  button in the Cells group of the Home tab
  - Note pressing the Delete key on the keyboard does NOT delete rows or columns, it clears them.
- All subsequent rows or columns are relabeled and Excel automatically updates all the formula cell references to use the new row numbers and column letters.
- Though rarely needed, it is possible to clear entire row or column's data without deleting the row.
  - Select the rows or columns
  - Press the delete key on the keyboard
    - Alternatively, you can right-click and choose Clear Contents on the popup menu




Notes	Activity
<p><b>Moving Cells</b></p> <ul style="list-style-type: none"> <li>• If you misplace data or formulas you can move them</li> <li>• Using the mouse <ul style="list-style-type: none"> <li>➤ <u>Select</u> the cells to be moved</li> <li>➤ Point to any edge of the selection. The mouse pointer will change to a 4-headed arrow</li> <li>➤ Drag the selection to the new location</li> </ul> </li> <li>• Using the clipboard <ul style="list-style-type: none"> <li>➤ <u>Select</u> the cells to be moved</li> <li>➤ Right-click the cells and choose Cut from the popup menu <ul style="list-style-type: none"> <li>– Or, press Ctrl-X or choose Cut from the Clipboard group of the Home tab</li> </ul> </li> <li>➤ Make the upper-left cell of the new location the active cell.</li> <li>➤ Right-click the cell and choose Paste from the popup menu <ul style="list-style-type: none"> <li>– Or, press Ctrl-V or choose Paste from the Clipboard group of the Home tab.</li> </ul> </li> </ul> </li> <li>• Excel automatically updates all cell references in formulas that refer to the moved cells.</li> </ul>	<p>Move A3:G15 down a couple of rows.</p> <p>Note formulas update.</p> <p>Undo</p>
<p><b>Spell Checking Worksheets</b></p> <ul style="list-style-type: none"> <li>• Like all Microsoft Office products, Excel includes a spell checker.</li> <li>• Make A1 the active cell (Ctrl-Home)</li> <li>• To start the spell checker, click the Spelling  button in the Proofing group of the Review tab <ul style="list-style-type: none"> <li>➤ Alternatively, you can press F7</li> </ul> </li> <li>• If there are spelling errors, the Spelling dialog box will appear.</li> <li>• For each misspelling, click either the Ignore Once, Ignore All, Add to Dictionary (use sparingly), Change, or Change All button as appropriate.</li> <li>• There is no feature in Excel that highlights misspelled words as you enter them (like in Word).</li> </ul>	<p>Insert a spelling error if necessary. Spell check the workbook.</p>

Notes	Activity
<b>Saving A Workbook</b>	<b>Save the workbook</b>

- The easiest way to save a workbook is to click the  on the Quick Access toolbar.
  - If this is a new workbook that has never been saved before, you'll have to designate the file location (Save In), file name and (optionally) file type.
  - If this workbook has been previously saved, clicking the  button will simply replace the old version of the workbook with the new one (*no questions asked*)
- You should save your workbook and its updates frequently. My general rule of thumb is "*If you don't want to type it over, save it.*"
- Saving a second (or third or fourth) copy of a workbook.
  - If you want to save changes but also keep the original version of the workbook you'll have to do a *Save As*
  - Click the Office Button, then click Save As
  - You'll be allowed to specify a new location, file name and type.
- Saving a workbook that is compatible with older versions of Excel
  - Excel 2007 saves workbooks in a format that older versions of Excel can't decipher
  - Excel 2007 has many new features that older versions of Excel can't handle (SmartArt for instance)
  - You can instruct Excel 2007 to save the current workbook in a format that is recognizable by older versions of Excel.
    - Any *new* features will not be saved
  - Click the Office Button, point to (but don't click) Save As
  - In the submenu that appears, Excel Word 97-2003 workbook.
  - Designate the location and name of the file.
    - Note the Save As type has changed
  - Alternatively, you could simply open the Save As dialog box and change the Save As Type box to Excel 97-2003 Workbook

Notes	Activity
<ul style="list-style-type: none"> <li>• Saving a workbook as a Web Page           <ul style="list-style-type: none"> <li>➤ Excel makes it easy to convert a workbook to a web page that can be displayed in any web browser</li> <li>➤ Click the Office Button, click Save As</li> <li>➤ Change the Save As Type to Web Page</li> <li>➤ Any clipart in your workbook will be saved in a separate folder that has the same name as the workbook.</li> <li>➤ Caution: Many advanced features of Excel do not transfer well when saved as a web page.</li> </ul> </li> </ul>	<p><b>Activity</b></p> <p><b>No demo.</b></p> <p><b>Information only</b></p>

## Printing Worksheets


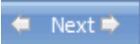
- Before printing a worksheet, you should always run the [Spell Checker](#) and then [preview](#) the pages.
- If the worksheet is wider than one page, you may be able to improve the printed appearance by changing the worksheet to landscape orientation.
  - Use the Orientation button  button in the Page Setup group of the Page Layout tab
- To print the workbook (or worksheet)
  - Click the Office button 
  - Choose Print  from the Office menu. The Print dialog box appears
  - Choose Active sheet(s) to print the current worksheet (or multiple, selected worksheets)
  - Choose Entire workbook to print all the worksheets in the workbook.
  - Click the OK button.

**Change the orientation to landscape.**

Notes	Activity
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- When you print the worksheet, Excel prints exactly what appears on the screen.
  - The book demonstrates how to get Excel to **display the formulas** in the cells instead of the results of the formulas.
  - In the past, this feature was used to *document* a worksheet. If the worksheet was lost, the formulas could be re-entered more easily using a printed version of the worksheet that displayed formulas.
    - Instead of wasting the paper, make frequent, electronic backups of important worksheets.
  - This feature was also by instructors to verify students were entering correct formulas.
    - You'll be submitting electronic versions of your spreadsheets, so your instructor will be able to view the formulas directly to ensure you entered them correctly.

## Getting Help










- Office 2007 (not just Excel) comes with extensive Help
  - This Help system is maintained, *on-line*, by Microsoft so you always have the most current information available.
    - If you're not connected to the Internet, Excel still provides help, but it is not as extensive.
- Click the  button (upper right corner of the Excel window)
  - Alternatively, you can press the F1 key.
- The most useful feature of the Help system is the Search box.
  - Enter a short phrase or just a word
  - Click the Search button
  - Click the blue text of any of the listed results for detailed information.
  - Note the Previous/Next arrows  that allow you step through multiple pages of results

Search Help for *align data*

Center labels in B3:G4

Right-align G1. Note overflow to left.

Notes	Activity
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- Help Toolbar buttons
  -  go *back* to the previous Help screen(s)
  -  go *forward* to a previously viewed Help screen
    - Only available after clicking Back
  -  cancel the loading of this Help screen
    - Rarely needed
  -  *Refresh* (reload) this Help screen
    - Rarely needed
  -  Return to the *Home* (main) Help screen
  -  Print this Help screen
    - Use sparingly—Help is always available
  -  Change the size of the font used in the Help screen
  -  Display or hide the Help Table of Contents
  -  *Pin* this Help screen—always keep it on top of other windows.
    - Click again to *unpin* the screen.

## Exiting Excel

Exit, saving on the way out.

- Click the Close Window button in the upper right corner of the screen
  - Or, Office Button, Exit Excel
- Don't need to close workbook(s) first
- If the workbook has not been saved, Excel will give you a chance to save it.