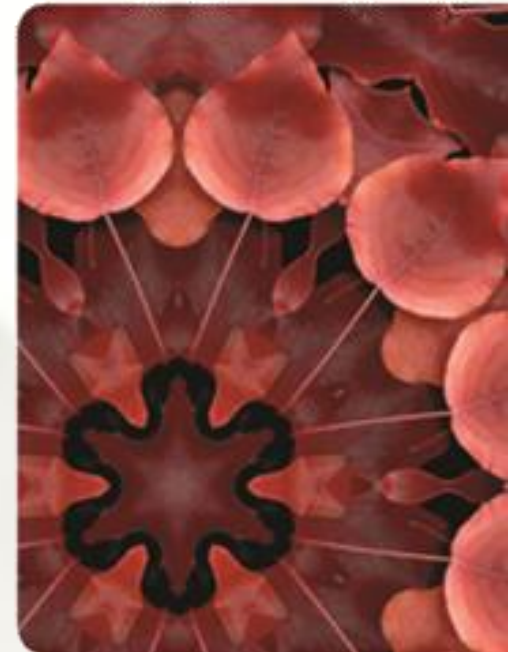


Excel

Tutorial 1 – Getting Started with Excel

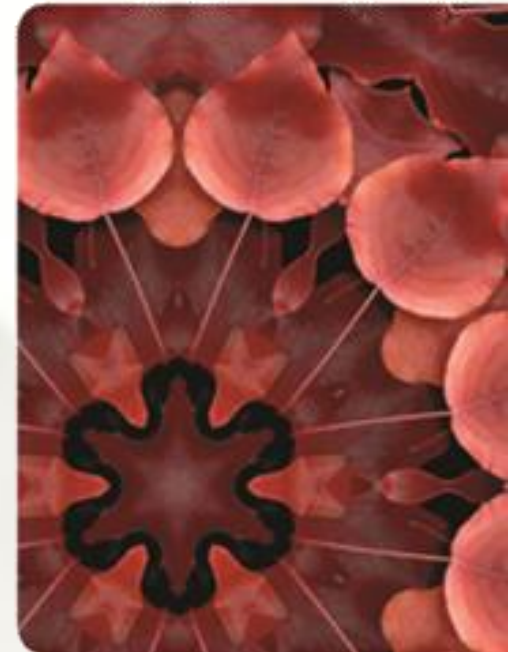
Tutorial 2 – Formatting a Workbook

Tutorial 3 – Working with Formulas
and Functions



Excel Tutorial 1

Getting Started with Excel



Objectives

- Understand the use of spreadsheets and Excel
- Scroll through a worksheet and navigate between worksheets
- Enter text, numbers, and dates into a worksheet
- Resize, insert, and remove columns and rows
- Select and move cell ranges
- Insert formulas and functions
- Insert, delete, move, and rename worksheets
- Preview and print a workbook

Introducing Excel

- **Microsoft Office Excel 2007** (or **Excel**) is a computer program used to enter, analyze, and present quantitative data
- A **spreadsheet** is a collection of text and numbers laid out in a rectangular grid.
 - Often used in business for budgeting, inventory management, and decision making
- **What-if analysis** lets you change one or more values in a spreadsheet and then assess the effect those changes have on the calculated values



Introducing Excel

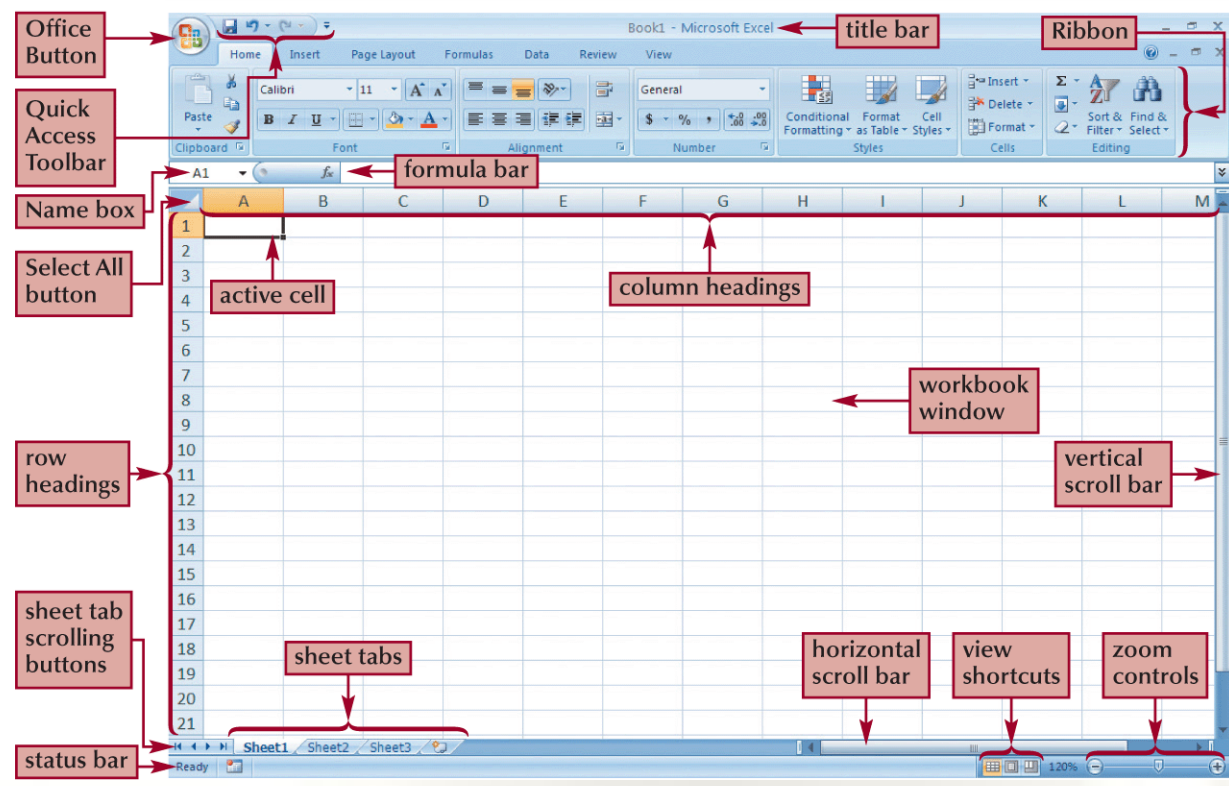
Spreadsheet data in Excel

Figure 1-2

	A	B	C	D	E	F	G	H	I	J
1	Cash Flow Comparison									
2	Budgeted vs. Actual									
3			Jan-10							
4		Budgeted	Actual							
5	Cash balance (start of month)	\$4,500.00	\$4,500.00							
6	Cash receipts									
7	Cash sales	12,600.00	14,688.00							
8	Cash expenditures									
9	Advertising	1,200.00	1,425.00							
10	Wages	7,200.00	7,850.00							
11	Supplies	3,600.00	4,350.00							
12	Total cash expenditures	12,000.00	13,625.00							
13	Net cash flow	600.00	1,063.00							
14	Cash balance (end of month)	\$5,100.00	\$5,563.00							
15										
16										
17										
18										
19										

Exploring Excel

Figure 1-3 Parts of the Excel window



Navigating a Worksheet

- Excel provides several ways to navigate a worksheet

Figure 1-5 Excel navigation keys

Press	To move the active cell
↑, ↓, ←, →	Up, down, left, or right one cell
Home	To column A of the current row
Ctrl+Home	To cell A1
Ctrl+End	To the last cell in the worksheet that contains data
Enter	Down one row or to the start of the next row of data
Shift+Enter	Up one row
Tab	One column to the right
Shift+Tab	One column to the left
Page Up, Page Down	Up or down one screen
Ctrl+Page Up, Ctrl+Page Down	To the previous or next sheet in the workbook

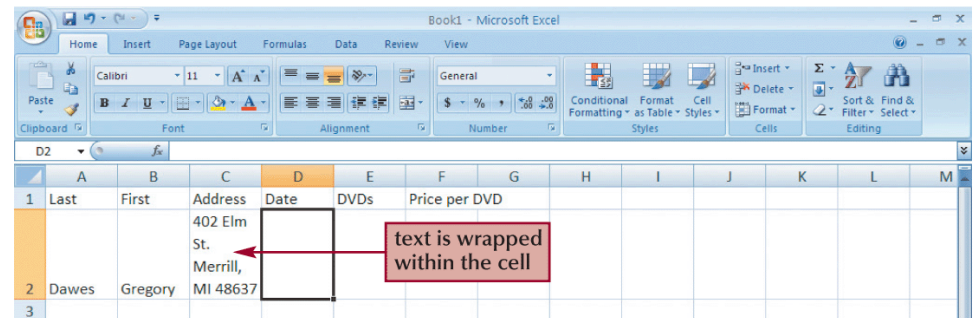
Entering Text, Numbers, and Dates in Cells

- The **formula bar** displays the content of the active cell
- **Text data** is a combination of letters, numbers, and some symbols
- **Number data** is any numerical value that can be used in a mathematical calculation
- **Date** and **time data** are commonly recognized formats for date and time values

Entering Multiple Lines of Text Within a Cell

- Click the cell in which you want to enter the text
- Type the first line of text
- For each additional line of text, press the **Alt+Enter** keys (that is, hold down the Alt key as you press the Enter key), and then type the text

Figure 1-10 Two lines of text entered within a cell



Changing the Column Width and Row Height

- **Autofitting** eliminates any empty space by matching the column to the width of its longest cell entry or the row to the height of its tallest cell entry
- Drag the right border of the column heading left to decrease the column width or right to increase the column width
- Drag the bottom border of the row heading up to decrease the row height or down to increase the row height

or

- Double-click the right border of a column heading or the bottom border of a row heading to AutoFit the column or row to the cell contents (or select one or more columns or rows, click the Home tab on the Ribbon, click the Format button in the Cells group, and then click AutoFit Column Width or AutoFit Row Height)

or

- Select one or more columns or rows
- Click the Home tab on the Ribbon, click the Format button in the Cells group, and then click Column Width or Row Height
- Enter the column width or row height you want, and then click the OK button

Inserting a Column or Row

New column inserted in the worksheet **Figure 1-15**

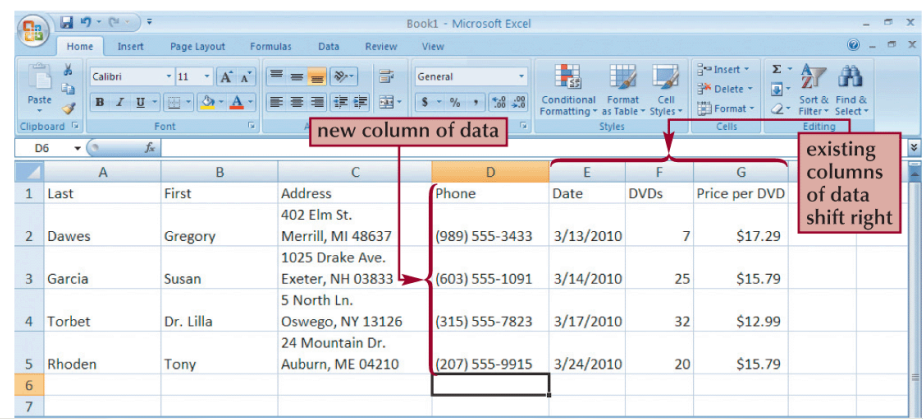
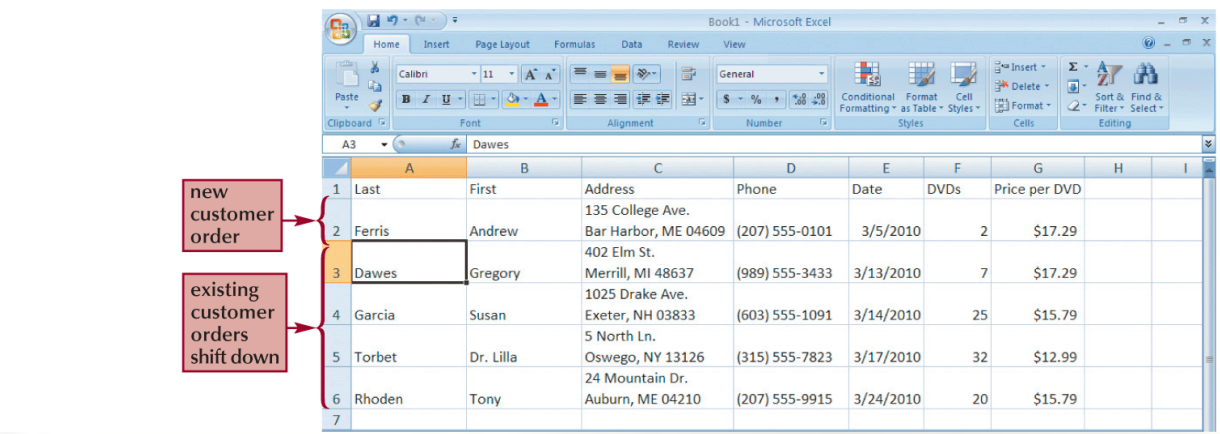


Figure 1-16 New row inserted in the worksheet



Deleting and Clearing a Row or Column

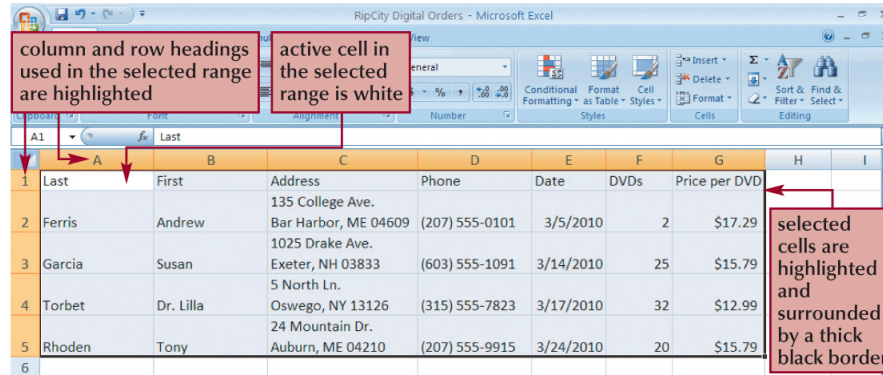
- **Clearing** data from a worksheet removes the data but leaves the blank cells
- **Deleting** data from the worksheet removes both the data and the cells



Selecting Cell Ranges

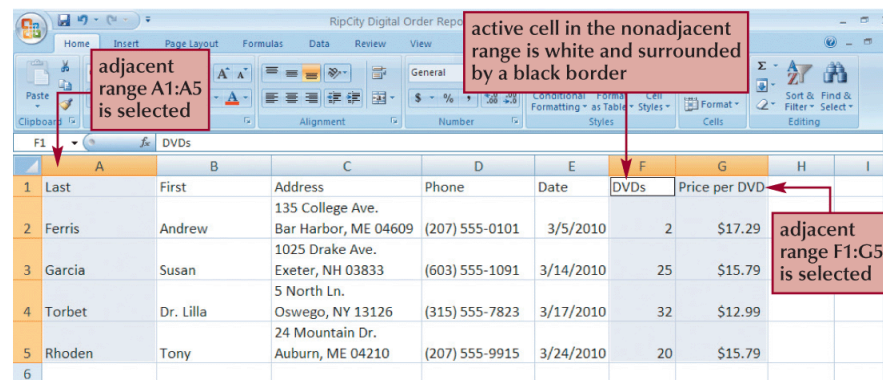
Adjacent range A1:G5 selected

Figure 1-17



Nonadjacent range A1:A5;F1:G5 selected

Figure 1-18



Moving or Copying a Cell or Range

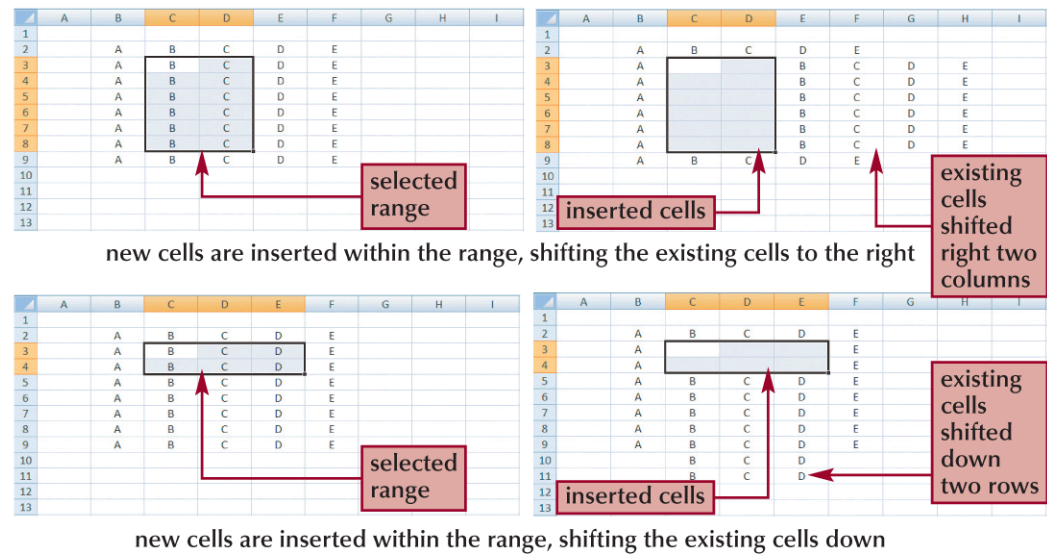
Selected range being moved **Figure 1-19**

The screenshot shows the Microsoft Excel interface with a spreadsheet titled "RipCity Digital Orders". The spreadsheet has columns labeled "Last", "First", "Address", "Phone", "Date", "DVDs", and "Price per DVD". Rows 1 through 5 contain data. A range of cells from A1 to G5 is selected and highlighted in orange. A red outline is drawn around the new location, cells A5 to G9. A red arrow points from the outline to a ScreenTip box that displays "A5:G9".

	A	B	C	D	E	F	G	H	I
1	Last	First	Address	Phone	Date	DVDs	Price per DVD		
2	Ferris	Andrew	135 College Ave. Bar Harbor, ME 04609	(207) 555-0101	3/5/2010	2	\$17.29		
3	Garcia	Susan	1025 Drake Ave. Exeter, NH 03833	(603) 555-1091	3/14/2010	25	\$15.79		
4	Torbet	Dr. Lilla	5 North Ln. Oswego, NY 13126	(315) 555-7823	3/17/2010	32	\$12.99		
5	Rhoden	Tony	24 Mountain Dr. Auburn, ME 04210	(207) 555-9915	3/24/2010	20	\$15.79		
6									
7									
8									
9									
10									
11									

Inserting and Deleting a Cell Range

Figure 1-21 Cells inserted within a cell range



Entering a Formula

- A **formula** is an expression that returns a value
- A formula is written using **operators** that combine different values, returning a single value that is then displayed in the cell
 - The most commonly used operators are **arithmetic operators**
- The **order of precedence** is a set of predefined rules used to determine the sequence in which operators are applied in a calculation



Entering a Formula

Figure 1-22

Arithmetic operators

Operation	Arithmetic Operator	Example	Description
Addition	+	=10+A1 =B1+B2+B3	Adds 10 to the value in cell A1 Adds the values in cells B1, B2, and B3
Subtraction	-	=C9-B2 =1-D2	Subtracts the value in cell B2 from the value in cell C9 Subtracts the value in cell D2 from 1
Multiplication	*	=C9*B9 =E5*0.06	Multiplies the values in cells C9 and B9 Multiplies the value in cell E5 by 0.06
Division	/	=C9/B9 =D15/12	Divides the value in cell C9 by the value in cell B9 Divides the value in cell D15 by 12
Exponentiation	^	=B5^3 =3^B5	Raises the value of cell B5 to the third power Raises 3 to the value in cell B5

Entering a Formula

Figure 1-23

Order of precedence rules

Formula (A1=50, B1=10, C1=5)	Order of Precedence Rule	Result
=A1+B1*C1	Multiplication before addition	100
=(A1+B1)*C1	Expression inside parentheses executed before expression outside	300
=A1/B1-C1	Division before subtraction	0
=A1/(B1-C1)	Expression inside parentheses executed before expression outside	10
=A1/B1*C1	Two operators at same precedence level, leftmost operator evaluated first	25
=A1/(B1*C1)	Expression inside parentheses executed before expression outside	1

Entering a Formula

- Click the cell in which you want the formula results to appear
- Type = and an expression that calculates a value using cell references and arithmetic operators
- Press the Enter key or press the Tab key to complete the formula



Entering a Formula

Figure 1-24 Formula references color coded

The screenshot shows the Microsoft Excel interface with a spreadsheet titled "RipCity Digital Orders". The formula bar at the top displays the formula `=F6*G6`. The spreadsheet data is as follows:

	A	B	C	D	E	F	G
1	RipCity Digital						
2	Customer Orders						
3	3/31/2010						
4							
5	Last	First	Address	Phone	Date	DVDs	Price per DVD Charge
6	Ferris	Andrew	135 College Ave. Bar Harbor, ME 04609	(207) 555-0101	3/5/2010	2	\$17.29 =F6*G6
7	Garcia	Susan	1025 Drake Ave. Exeter, NH 03833	(603) 555-1091	3/14/2010	25	\$15.79
8	Torbet	Dr. Lilla	5 North Ln. Oswego, NY 13126	(315) 555-7823	3/17/2010	32	\$12.99
9	Rhoden	Tony	24 Mountain Dr. Auburn, ME 04210	(207) 555-9915	3/24/2010	20	\$15.79
10							

Red callout boxes provide the following information:

- formula visible in the formula bar
- cell reference colors match the cell border colors
- selected cell shows the formula

Copying and Pasting Formulas

- With formulas, however, Excel adjusts the formula's cell references to reflect the new location of the formula in the worksheet

Formula copied and pasted **Figure 1-25**

The screenshot shows the Microsoft Excel interface with the following data in the worksheet:

	A	B	C	D	E	F	G	H	I
1	RipCity Digital								
2	Customer Orders								
3	3/31/2010								
4									
5	Last	First	Address	Phone	Date	DVDs	Price per DVD	Charge	
6	Ferris	Andrew	135 College Ave. Bar Harbor, ME 04609	(207) 555-0101	3/5/2010	2	\$17.29	\$34.58	
7	Garcia	Susan	1025 Drake Ave. Exeter, NH 03833	(603) 555-1091	3/14/2010	25	\$15.79	\$394.75	
8	Torbet	Dr. Lilla	5 North Ln. Oswego, NY 13126	(315) 555-7823	3/17/2010	32	\$12.99	\$415.68	
9	Rhoden	Tony	24 Mountain Dr. Auburn, ME 04210	(207) 555-9915	3/24/2010	20	\$15.79	\$315.80	
10									
11									

Annotations in the image:

- A red box around cell F8 contains the text "formula copied from this cell".
- A red arrow points from cell F8 to the formula bar, which contains "=F8*G8".
- A red box around the formula bar contains the text "formula pasted into cells H8 and H9".
- Red arrows point from the formula bar to cells H8 and H9.
- Red boxes around cells H8 and H9 contain the text "results of the pasted formula".

Introducing Functions

- A **function** is a named operation that returns a value
- For example, to add the values in the range A1:A10, you could enter the following long formula:

=A1+A2+A3+A4+A5+A6+A7+A8+A9+A10

Or, you could use the **SUM** (ou **SOMA**) function to accomplish the same thing:

=SUM(A1:A10)

Entering a Function

Figure 1-26 SUM function being entered

The screenshot shows Microsoft Excel with the following data in the spreadsheet:

	A	B	C	D	E	F	G	H	I
1	RipCity Digital								
2	Customer Orders								
3	3/31/2010								
4									
5	Last	First	Address	Phone	Date	DVDs	Price per DVD	Charge	
6	Ferris	Andrew	135 College Ave. Bar Harbor, ME 04609	(207) 555-0101	3/5/2010	2	\$17.29	\$34.58	
7	Garcia	Susan	1025 Drake Ave. Exeter, NH 03833	(603) 555-1091	3/14/2010	25	\$15.79	\$394.75	
8	Torbet	Dr. Lilla	5 North Ln. Oswego, NY 13126	(315) 555-7823	3/17/2010	32	\$12.99	\$415.68	
9	Rhoden	Tony	24 Mountain Dr. Auburn, ME 04210	(207) 555-9915	3/24/2010	20	\$15.79	\$315.80	
10					TOTAL	=SUM(F6:F9)			
11									
12									

Annotations in the image:

- A red box with the text "a colored border surrounds the range entered in the function" points to the range F6:F9 in the spreadsheet.
- A red box with the text "ScreenTip shows the function being entered" points to the formula bar, which displays the formula `=SUM(F6:F9)` and a ScreenTip: `SUM(number1, [number2], ...)`.

Entering Functions with AutoSum

Figure 1-27 SUM function entered with AutoSum

click to enter an AutoSum function in the active cell

	A	B	C	D	E	F	G	H	I
1	RipCity Digital								
2	Customer Orders								
3	3/31/2010								
4									
5	Last	First	Address	Phone	Date	DVDs	Price per DVD	Charge	
6	Ferris	Andrew	135 College Ave. Bar Harbor, ME 04609	(207) 555-0101	3/5/2010	2	\$17.29	\$34.58	
7	Garcia	Susan	1025 Drake Ave. Exeter, NH 03833	(603) 555-1091	3/14/2010	25	\$15.79	\$394.75	
8	Torbet	Dr. Lilla	5 North Ln. Oswego, NY 13126	(315) 555-7823	3/17/2010	32	\$12.99	\$415.68	
9	Rhoden	Tony	24 Mountain Dr. Auburn, ME 04210	(207) 555-9915	3/24/2010	20	\$15.79	\$315.80	
10					TOTAL	79		=SUM(H6:H9)	
11									
12									

Excel inserts the SUM function into the selected cell

Inserting and Deleting a Worksheet

- To insert a new worksheet into the workbook, right-click a sheet tab, click Insert on the shortcut menu, select a sheet type, and then click the OK button
- You can delete a worksheet from a workbook in two ways:
 - You can right-click the sheet tab of the worksheet you want to delete, and then click Delete on the shortcut menu
 - You can also click the Delete button arrow in the Cells group on the Home tab, and then click Delete Sheet



Renaming a Worksheet

- To rename a worksheet, you double-click the sheet tab to select the sheet name, type a new name for the sheet, and then press the Enter key
- Sheet names cannot exceed 31 characters in length, including blank spaces
- The width of the sheet tab adjusts to the length of the name you enter



Moving and Copying a Worksheet

- You can change the placement of the worksheets in a workbook
- To reposition a worksheet, you click and drag the sheet tab to a new location relative to other worksheets in the workbook
- To copy a worksheet, just press the Ctrl key as you drag and drop the sheet tab



Editing Your Work

- To edit the cell contents, you can work in **editing mode**
- You can enter editing mode in several ways:
 - double-clicking the cell
 - selecting the cell and pressing the F2 key
 - selecting the cell and clicking anywhere within the formula bar



Editing Your Work

Working in editing mode Figure 1-28

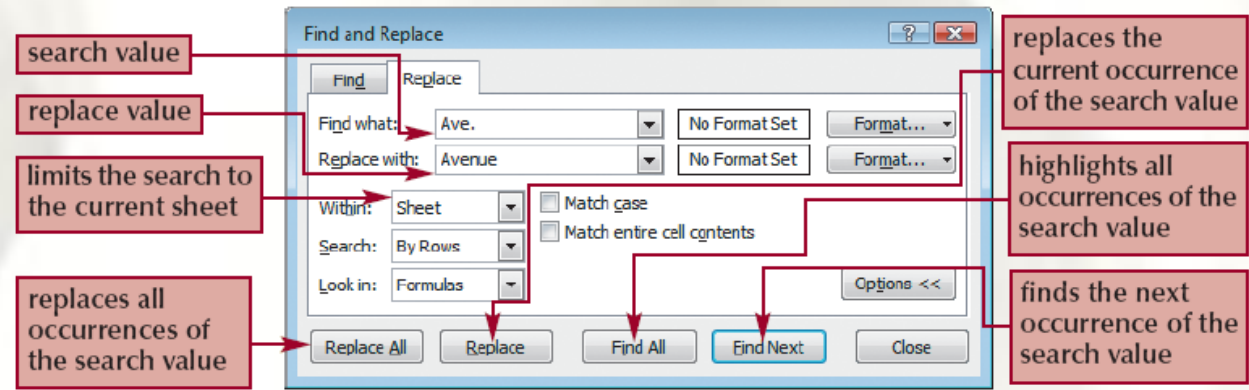
	A	B	C	D	E	F	G	H	I
1	RipCity Digital								
2	Customer Orders								
3	3/31/2010								
4									
5	Last	First	Address	Phone	Date	DVDs	Price per DVD	Charge	
6	Ferris	Andrew	135 College Ave. Bar Harbor, ME 04609	(207) 555-0101	3/5/2010	2	18.29	\$34.58	
7	Garcia	Susan	1025 Drake Ave. Exeter, NH 03833	(603) 555-1091	3/14/2010	25	\$15.79	\$394.75	
8	Torbet	Dr. Lilla	5 North Ln. Oswego, NY 13126	(315) 555-7823	3/17/2010	32	\$12.99	\$415.68	
9	Rhoden	Tony	24 Mountain Dr. Auburn, ME 04210	(207) 555-9915	3/24/2010	20	\$15.79	\$315.80	
10					TOTAL	79		\$1,160.81	
11									
12									
13									
14									
15									
16									
17									

status bar indicates Excel is in editing mode

Using Find and Replace

- You can use the **Find** command to locate numbers and text in the workbook and the **Replace** command to overwrite them

Figure 1-29 Find and Replace dialog box



Viewing and Printing Worksheet Formulas

- You can view the formulas in a workbook by switching to **formula view**, a view of the workbook contents that displays formulas instead of the resulting values
- To change the worksheet to formula view, press the **Ctrl+`** keys
- **Scaling** a printout reduces the width and the height of the printout to fit the number of pages you specify by shrinking the text size as needed



Viewing and Printing Worksheet Formulas

Figure 1-34

Worksheet in formula view

The screenshot shows the Microsoft Excel interface with the 'Formulas' tab selected. The worksheet 'RipCity Digital' is displayed in formula view. The data is as follows:

	D		G	H	
1	text and numbers remain unchanged	underlying date values displayed rather than the formatted dates		formulas displayed instead of the resulting values	
2					
3					
4					
5	Phone	Date	DVDs	Price per DVD	Charge
6	(207) 555-0101	40242	2	18.29	=F6*G6
7	(603) 555-1091	40251	25	15.79	=F7*G7
8	(315) 555-7823	40254	32	12.99	=F8*G8
9	(207) 555-9915	40261	20	15.79	=F9*G9
10		TOTAL	=SUM(F6:F9)		=SUM(H6:H9)
11					
12					

Viewing and Printing Worksheet Formulas

Printout scaled to one page

Figure 1-35

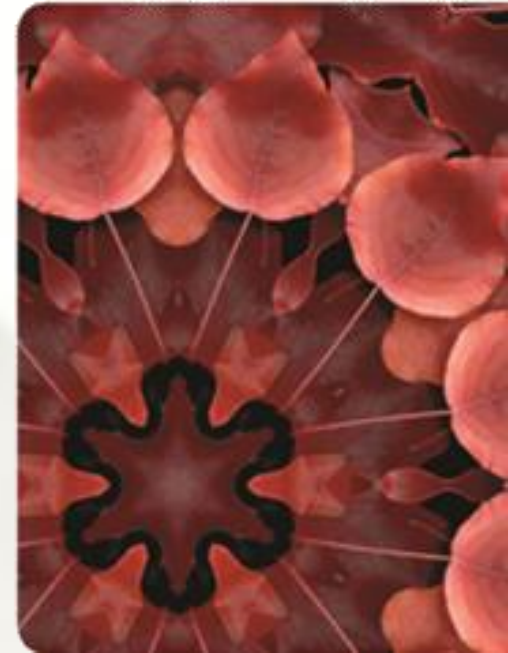
The screenshot shows the Microsoft Excel interface with the following annotations:

- Printout width and height set to a single page:** A red box highlights the 'Page Layout' ribbon, specifically the 'Scale to Fit' group where 'Width: 1 page' and 'Height: 1 page' are selected.
- text size reduced to fit the worksheet on one page:** A red box points to the text in the worksheet, indicating that the font size has been adjusted for better readability when scaled to one page.
- zoom level set to 50%:** A red box points to the zoom slider in the bottom right corner of the Excel window, which is set to 50%.

Order #	Customer Order #	First	Last	Address	Phone	Date	QTY	Price per DVD	Charge
40240									
		Forrie	Andrew	135 Oaktop Avenue Baltimore, ME 04609	(207) 959-9101	4/24/02	2	15.29	-F6*G6
		Garcia	Steven	1625 Drake Avenue Exeter, NH 03823	(603) 959-1091	4/25/01	15	15.79	-J7*O7
		Tarkenton	Dr. Lila	9 Hawks Lane Oroonoke, NH 03266	(381) 959-7823	4/28/04	32	12.99	-F6*G6
		Rhodes	Tony	24 Hawthorn Drive Baltimore, ME 04609	(207) 959-9106	4/24/01	20	15.79	-F6*G6
						TOTAL			-SUM(F6:F9)

Excel Tutorial 2

Formatting a Workbook



Objectives

- Format text, numbers, and dates
- Change font colors and fill colors
- Merge a range into a single cell
- Apply a built-in cell style. Select a different theme.
Apply a built-in table style
- Add conditional formats to tables with highlight rules and data bars
- Hide worksheet rows
- Insert print titles, set print areas, and insert page breaks
- Enter headers and footers



Formatting Text

- The appearance of text is determined by its **typeface**, which is the specific design used for the characters

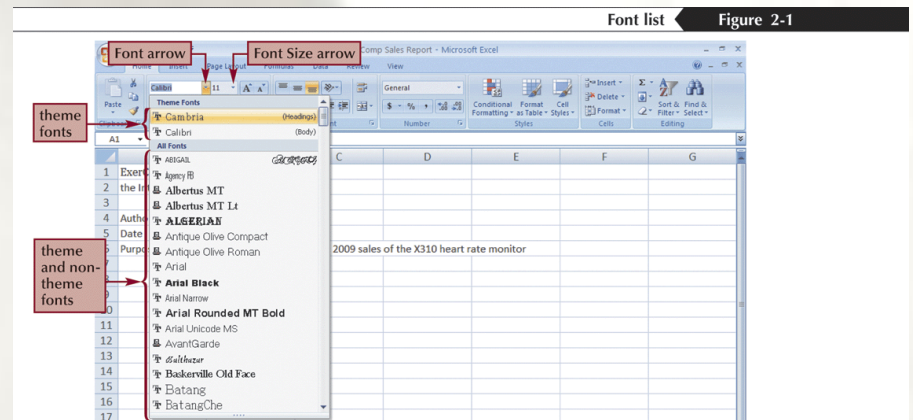
– Font

- Serif fonts
- Sans serif fonts
- Theme font
- Non-theme font

– Font Style

– Font Size

- Measured in **points**



Formatting Data

- By default, values appear in the **General number format**, which, for the most part, displays numbers exactly as you enter them
- The Number group on the Home tab has buttons for formatting the appearance of numbers
- **Comma style** button
- **Decrease Decimal** button
- **Percent Style** button
- **Increase Decimal** button
- **Accounting Number Format** button



Formatting Data

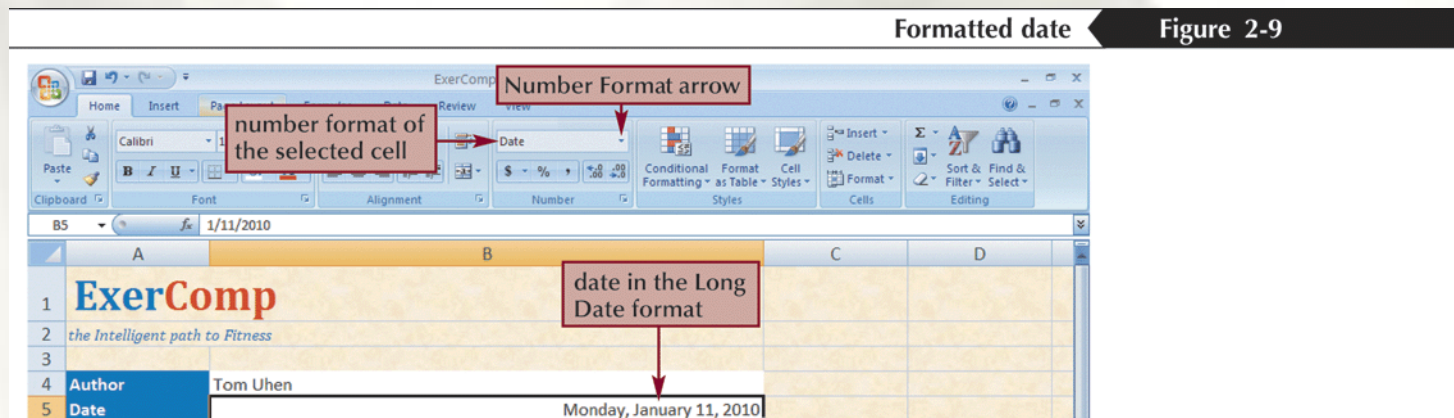
Figure 2-8 Worksheet after formatting numbers

Units Sold	Region	2008 Sales	2009 Sales	Increase	% Increase
	R01	3,605	3,853	248	6.88%
	R02	3,966	3,842	(124)	-3.13%
	R03	3,760	4,035	275	7.31%
	R04	3,777	4,063	286	7.57%
	R05	3,974	3,725	(249)	-6.27%
	R06	3,656	3,937	281	7.69%
	R07	3,554	3,875	321	9.03%
	R08	3,844	3,844	-	0.00%
	Total	30,136	31,174	1,038	3.44%

Revenue	Region	2008 Sales	2009 Sales	Increase	% Increase
	R01	\$ 104,364.75	\$ 115,397.35	\$ 11,032.60	10.57%
	R02	114,815.70	115,067.90	252.20	0.22%
	R03	108,852.00	120,848.25	11,996.25	11.02%
	R04	109,344.15	121,686.85	12,342.70	11.29%
	R05	115,047.30	111,563.75	(3,483.55)	-3.03%
	R06	105,841.20	117,913.15	12,071.95	11.41%
	R07	102,888.30	116,056.25	13,167.95	12.80%
	R08	111,283.80	115,127.80	3,844.00	3.45%
	Total	\$ 872,437.20	\$ 933,661.30	\$ 61,224.10	7.02%

Formatting Dates and Times












- Although dates and times in Excel appear as text, they are actually numbers that measure the interval between the specified date and time and January 1, 1900 at 12:00 a.m.



Aligning Cell Content

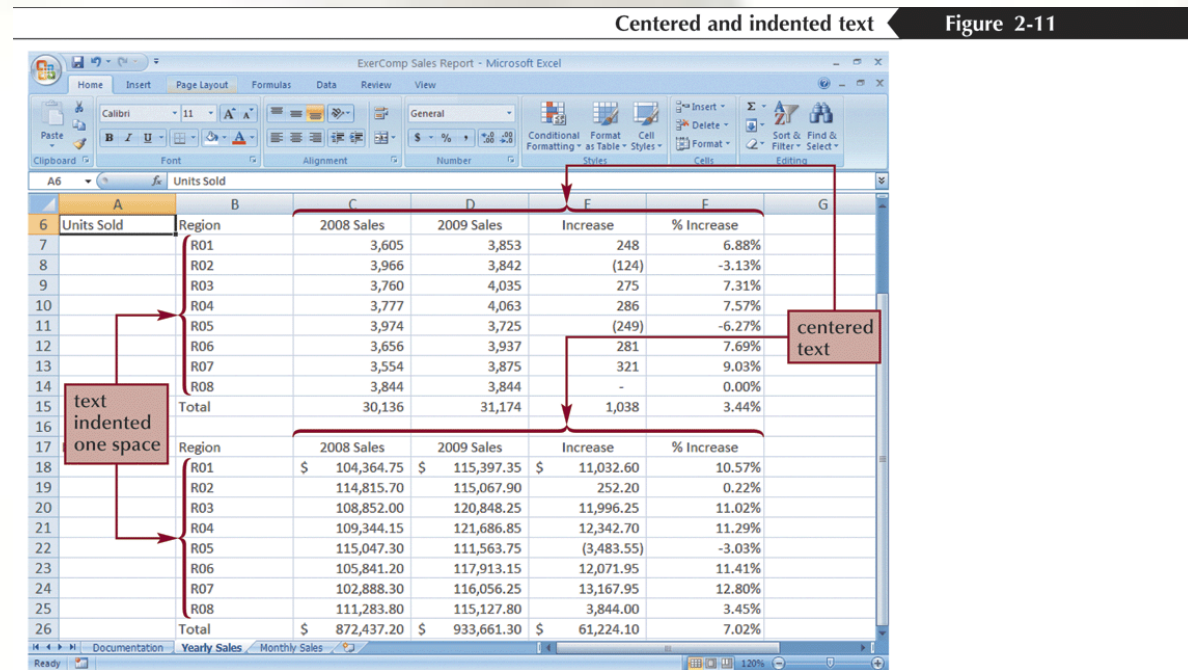
- In addition to left and right alignments, you can change the vertical and horizontal alignments of cell content to make a worksheet more readable
- Alignment buttons are located on the Home tab

Figure 2-10 Alignment buttons

Button	Description
	Aligns the cell content with the cell's top edge
	Vertically centers the cell content within the cell
	Aligns the cell content with the cell's bottom edge
	Aligns the cell content with the cell's left edge
	Horizontally centers the cell content within the cell
	Aligns the cell content with the cell's right edge
	Decreases the size of the indentation used in the cell
	Increases the size of the indentation used in the cell
	Rotates the cell content to an angle within the cell
	Forces the cell text to wrap within the cell borders
	Merges the selected cells into a single cell

Indenting Cell Content

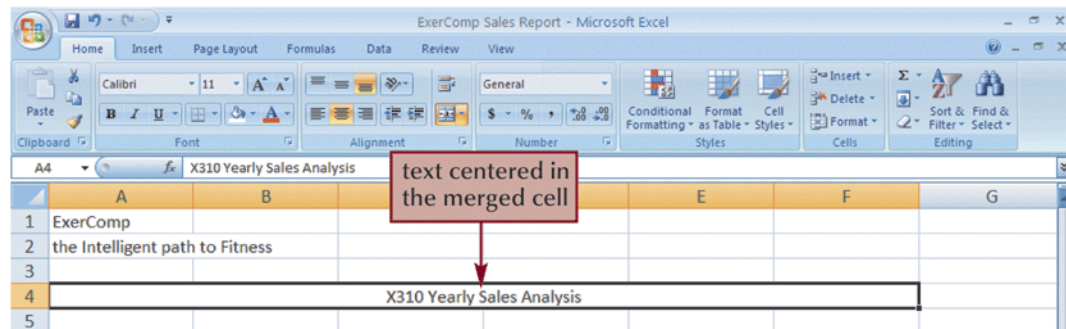
- You increase the indentation by roughly one character each time you click the Increase Indent button in the Alignment group on the Home tab



Merging Cells

- One way to align text over several columns or rows is to **merge**, or combine, several cells into one cell

Figure 2-12 Merged range with centered text



Rotating Cell Content

- To save space or to provide visual interest to a worksheet, you can rotate the cell contents so that they appear at any angle or orientation
- Select the range
- In the Alignment group, click the **Orientation** button and choose a proper rotation



Rotating Cell Content

Merged and rotated cell text Figure 2-13

Units Sold	Region	2008 Sales	2009 Sales	Increase	% Increase
	R01	3,605	3,853	248	6.88%
	R02	3,966	3,842	(124)	-3.13%
	R03	3,760	4,035	275	7.31%
	R04	3,777	4,063	286	7.57%
	R05	3,974	3,725	(249)	-6.27%
	R06	3,656	3,937	281	7.69%
	R07	3,554	3,875	321	9.03%
	R08	3,844	3,844	-	0.00%
	Total	30,136	31,174	1,038	3.44%

Revenue	Region	2008 Sales	2009 Sales	Increase	% Increase
	R01	\$ 104,364.75	\$ 115,397.35	\$ 11,032.60	10.57%
	R02	114,815.70	115,067.90	252.20	0.22%
	R03	108,852.00	120,848.25	11,996.25	11.02%
	R04	109,344.15	121,686.85	12,342.70	11.29%
	R05	115,047.30	111,563.75	(3,483.55)	-3.03%
	R06	105,841.20	117,913.15	12,071.95	11.41%
	R07	102,888.30	116,056.25	13,167.95	12.80%
	R08	111,283.80	115,127.80	3,844.00	3.45%
	Total	\$ 872,437.20	\$ 933,661.30	\$ 61,224.10	7.02%

rotated labels take up less space in the merged cells

Adding Cell Borders

- You can add borders to the left, top, right, or bottom of a cell or range, around an entire cell, or around the outside edges of a range using the **Border** button arrow

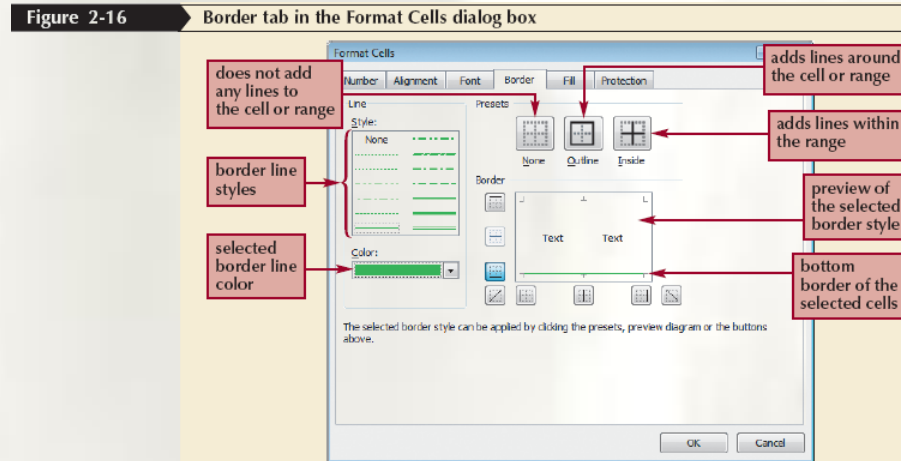
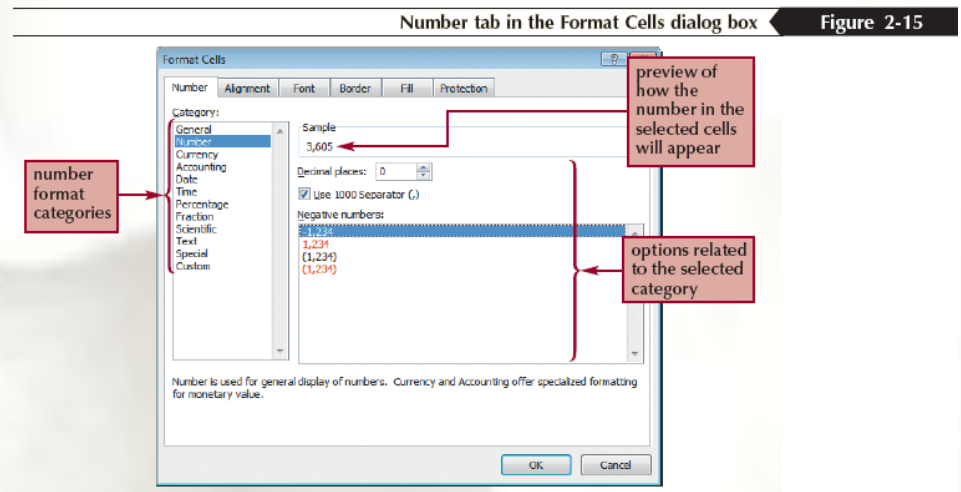
Figure 2-14 Borders added to cells

Region	2008 Sales	2009 Sales	Increase	% Increase
R01	3,605	3,853	248	6.88%
R02	3,966	3,842	(124)	-3.13%
R03	3,760	4,035	275	7.31%
R04	3,777	4,063	286	7.57%
R05	3,974	3,725	(249)	-6.27%
R06	3,656	3,937	281	7.69%
R07	3,554	3,875	321	9.03%
R08	3,844	3,844	-	0.00%
Total	30,136	31,174	1,038	3.44%

Region	2008 Sales	2009 Sales	Increase	% Increase
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R02	114,815.70	115,067.90	252.20	0.22%
R03	108,852.00	120,848.25	11,996.25	11.02%
R04	109,344.15	121,686.85	12,342.70	11.29%
R05	115,047.30	111,563.75	(3,483.55)	-3.03%
R06	105,841.20	117,913.15	12,071.95	11.41%
R07	102,888.30	116,056.25	13,167.95	12.80%
R08	111,283.80	115,127.80	3,844.00	3.45%
Total	\$ 872,437.20	\$ 933,661.30	\$ 61,224.10	7.02%

Working with the Format Cells Dialog Box

- The Format Cells dialog box has six tabs, each focusing on a different set of formatting options



Copying Formats with the Paste Options Button

Using the Paste Options button **Figure 2-17**

	A	B	C	D	E	F	G	H	I	J
1										
2		2008 Sales	Model	R01	R02	R03	Total			
3			X310	3,605	3,996	3,760	11,361			
4			X410	1,875	1,924	2,112	5,911			
5			X510	850	912	750	2,512			
6			Total	6,330	6,832	6,622	19,784			
7										
8										
9		2009 Sales	Model	R01	R02	R03	Total			
10			X310	3,853	3,842	4,035	11,730			
11			X410	2,112	1,801	2,304	6,217			
12			X510	1,025	1,115	912	3,052			
13			Total	6,990	6,758	7,251	20,999			
14										
15										

paste options menu:

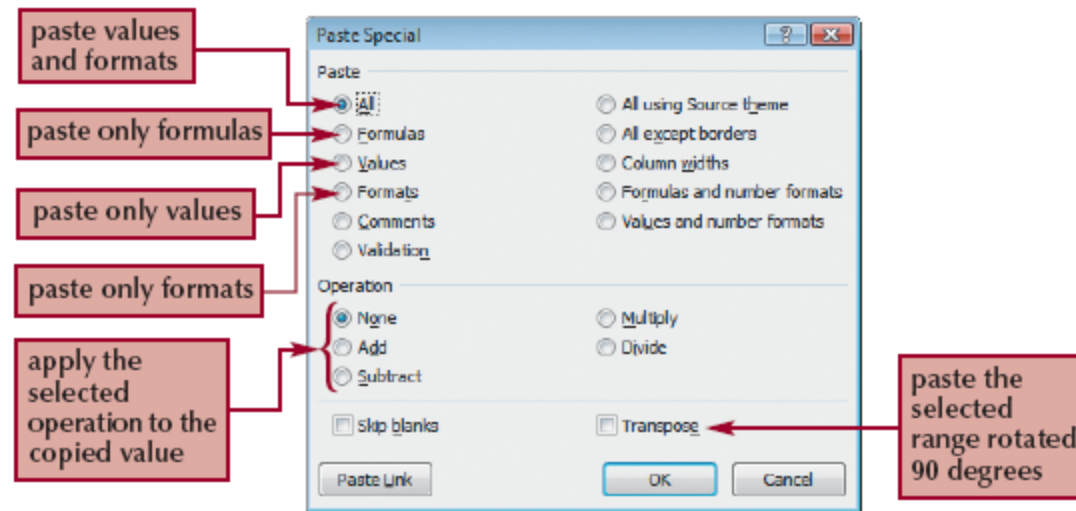
- Keep Source Formatting
- Use Destination Theme
- Match Destination Formatting
- Values Only
- Values and Number Formatting
- Values and Source Formatting
- Keep Source Column Widths
- Formatting Only
- Link Cells

Paste Options button

pastes only the formats

Copying Formats with Paste Special

Figure 2-18 Paste Special dialog box



Selecting Table Style Options

- After you apply a table style, you can choose which table elements you want included in the style

Revised table style **Figure 2-25**

The screenshot shows the Excel interface with a table named 'X310 Monthly Sales Analysis'. The 'Table Tools' ribbon is active, and the 'Design' tab is selected. The 'Table Style Options' group shows several options checked: 'Header Row', 'Total Row', 'Banded Rows', 'Banded Columns', 'First Column', and 'Last Column'. The 'Table Styles' gallery shows a preview of the selected style. Red callout boxes point to specific elements: 'selected table elements' points to the table's range; 'table styles show formatting for selected elements' points to the style preview; 'banded rows removed' points to the 'Banded Rows' checkbox; 'header row formatted' points to the 'Header Row' checkbox; and 'last column formatted' points to the 'Last Column' checkbox.

Month	R01	R02	R03	R04	R05	R06	R07	R08	Total
Jan	288	345	326	307	364	310	316	352	2,608
Feb	278	304	294	297	310	278	275	294	2,330
Mar	294	320	297	304	316	291	297	307	2,426
Apr	288	313	300	300	320	284	275	295	2,375
May	284	329	304	297	313	288	275	310	2,400
Jun	313	339	316	315	326	307	288	329	2,533
Jul	313	332	320	310	313	300	304	336	2,528
Aug	294	339	315	339	339	304	307	323	2,560
Sep	284	310	310	304	316	284	281	304	2,393
Oct	284	326	304	297	316	281	281	300	2,389
Nov	339	364	326	320	364	345	294	336	2,688
Dec	346	345	348	387	377	384	361	358	2,906
Total	3,605	3,966	3,760	3,777	3,974	3,656	3,554	3,844	30,136

Adding Data Bars

- A **data bar** is a horizontal bar added to the background of a cell to provide a visual indicator of the cell's value
- Select the cell(s)
- In the Styles group on the Home tab, click the **Conditional Formatting** button, point to **Data Bars**, and then click the DataBar option you wish to apply



Adding Data Bars

Figure 2-27 Data bars added to the regional monthly sales data

January sales for the R01 region are lower than expected

Month	R01	R02	R03	R04	R05	R06	R07	R08	Total
Jan	288	345	326	307	364	310	316	352	2,608
Feb	278	304	294	297	310	278	275	294	2,330
Mar	294	320	297	304	316	291	297	307	2,426
Apr	288	313	300	300	320	284	275	295	2,375
May	284	329	304	297	313	288	275	310	2,400
Jun	313	339	316	315	326	307	288	329	2,533
Jul	313	332	320	310	313	300	304	336	2,528
Aug	294	339	315	339	339	304	307	323	2,560
Sep	284	310	310	304	316	284	281	304	2,393
Oct	284	326	304	297	316	281	281	300	2,389
Nov	339	364	326	320	364	345	294	336	2,688
Dec	346	345	348	387	377	384	361	358	2,906
Total	3,605	3,966	3,760	3,777	3,974	3,656	3,554	3,844	30,136

Month	R01	R02	R03	R04	R05	R06	R07	R08	Total
Jan	352	364	345	352	336	361	325	342	2,777
Feb	297	326	310	313	288	300	297	300	2,431

Hiding Worksheet Data

- Hiding rows, columns, and worksheets is an excellent way to conceal extraneous or distracting information
- In the Cells group on the Home tab, click the **Format** button, point to **Hide & Unhide**, and then click your desired option



Defining the Print Area

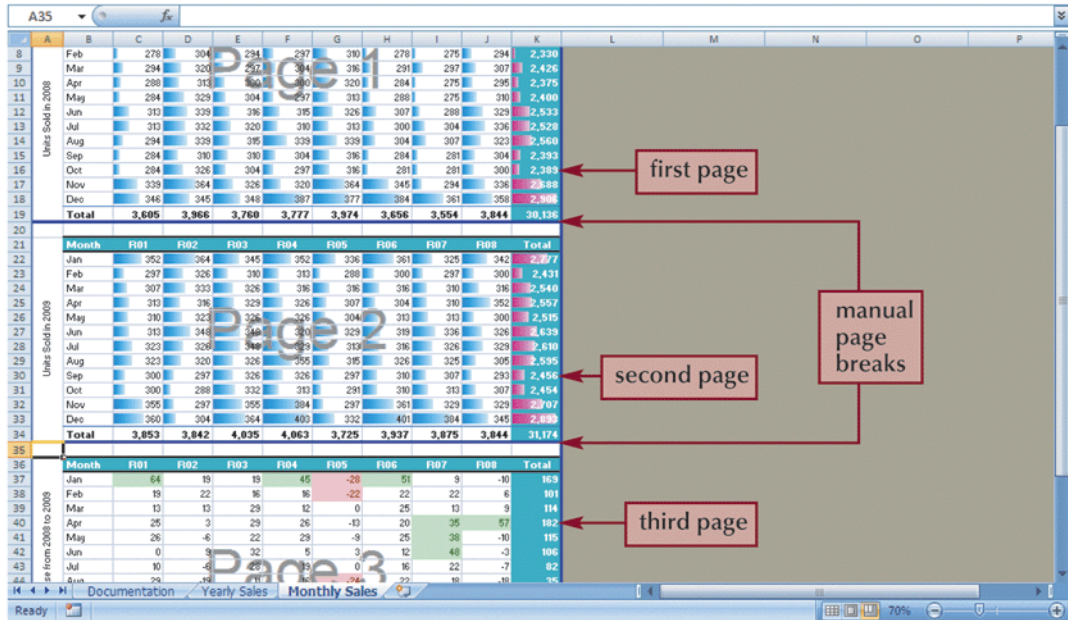
- By default, all parts of the active worksheet containing text, formulas, or values are printed
- You can select the cells you want to print, and then define them as a **print area**
- Select the range, in the Page Setup group on the Page Layout tab, click the **Print Area** button, and then click **Set Print Area**



Setting and Removing Page Breaks

Worksheet in Page Break Preview

Figure 2-35



Adding Print Titles

- You can repeat information, such as the company name, by specifying which rows or columns in the worksheet act as **print titles**, information that prints on each page
- In the Page Setup group on the Page Layout tab, click the **Print Titles** button
- Click the **Rows to repeat at top** box, move your pointer over the worksheet, and then select the range
- Click the **OK** button



Adding Print Titles

Figure 2-36 Second page of the printout

Click to add header

Click to

ExerComp
the intelligent path to fitness

X310 Monthly Sales Analysis

print title is repeated on every page

Click to add data

Month	F01	F02	F03	F04	F05	F06	F07	F08	Total
Jan	352	364	345	352	336	361	325	342	2,817
Feb	297	326	310	313	288	300	297	300	2,431
Mar	307	323	328	318	316	316	310	316	2,549
Apr	313	316	329	328	307	304	310	352	2,657
May	318	323	326	328	304	313	313	300	2,515
Jun	313	348	348	320	329	313	336	326	2,639
Jul	323	326	348	329	313	316	326	329	2,619
Aug	323	320	328	355	315	326	325	305	2,595
Sep	300	297	326	326	297	310	307	233	2,456
Oct	300	288	332	313	291	310	313	307	2,454
Nov	295	297	355	384	297	361	329	329	2,707
Dec	360	304	364	403	332	401	384	345	2,899

Units Sold in 2009

Documentation Yearly Sales Monthly Sales

Ready 60%

Adding Headers and Footers

- A **header** is the text printed in the top margin of each page
- A **footer** is the text printed in the bottom margin of each page
- Scroll to the top of the worksheet, and then click the left section of the header directly above cell A1 to display the Header & Footer Tools contextual tab



Adding Headers and Footers

Page header

Figure 2-37

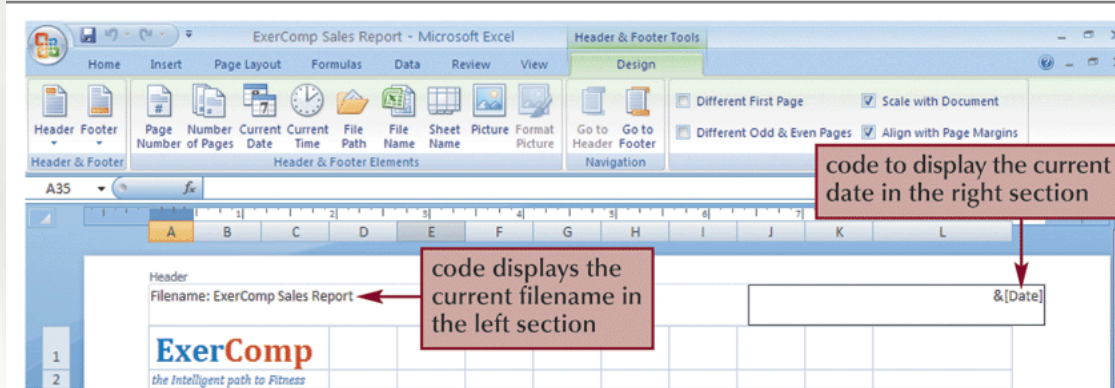
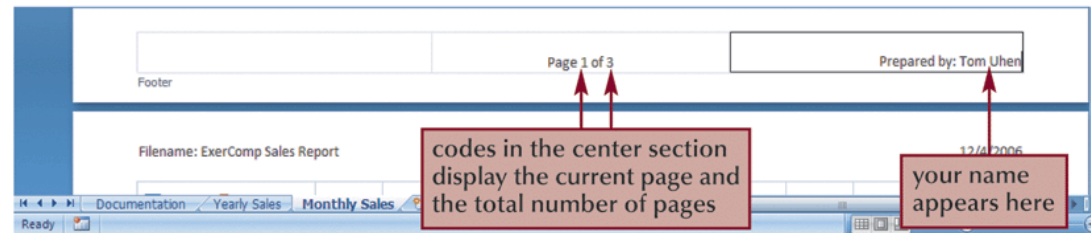


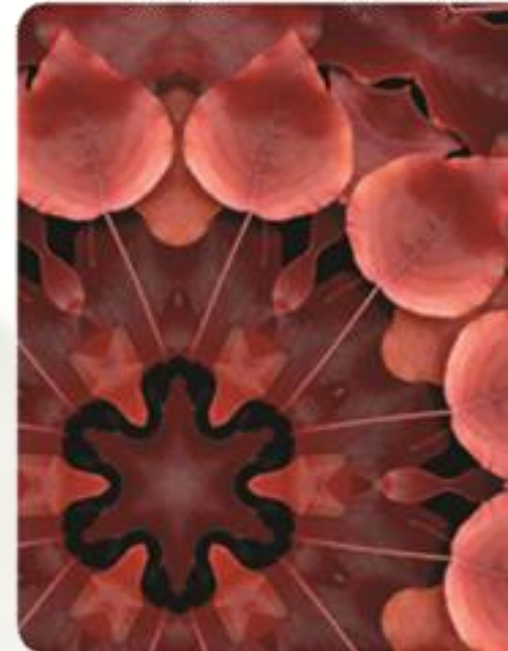
Figure 2-38

Page footer



Excel Tutorial 3

Working with Formulas and Functions



Objectives

- Copy formulas
- Build formulas containing relative, absolute, and mixed references
- Insert a function with the Insert Function dialog box
- Search for a function
- Type a function directly in a cell
- Use AutoFill to fill in a formula and complete a series
- Enter the IF logical function
- Insert the date with the TODAY function
- Calculate monthly mortgage payments with the PMT financial function



Using Relative References

Figure 3-2 Formula using a relative reference

original formula with a relative reference

	A	B	C	D
1	10	20	30	
2				
3	=A1			
4				
5				

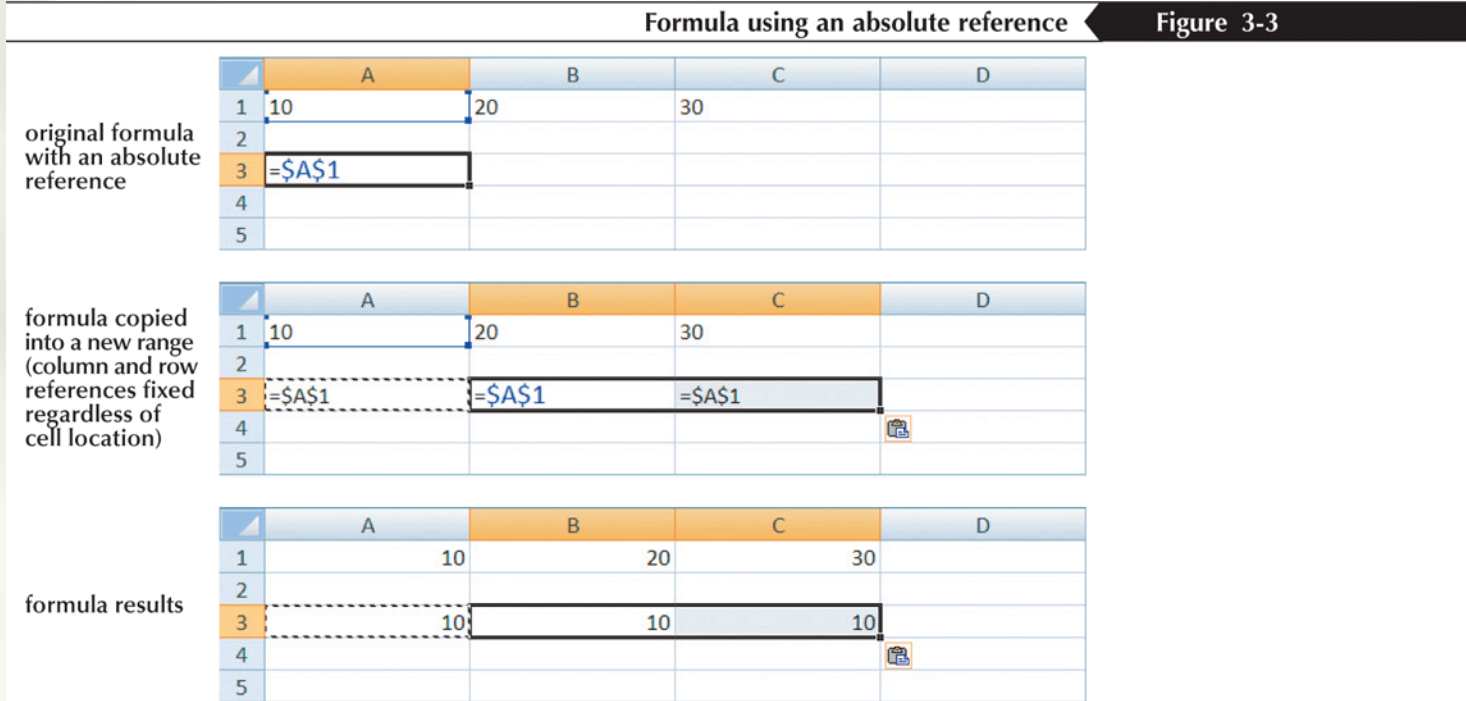
formula copied to a new range (column and row references shift based on cell location)

	A	B	C	D
1	10	20	30	
2				
3	=A1	=B1	=C1	
4				
5				

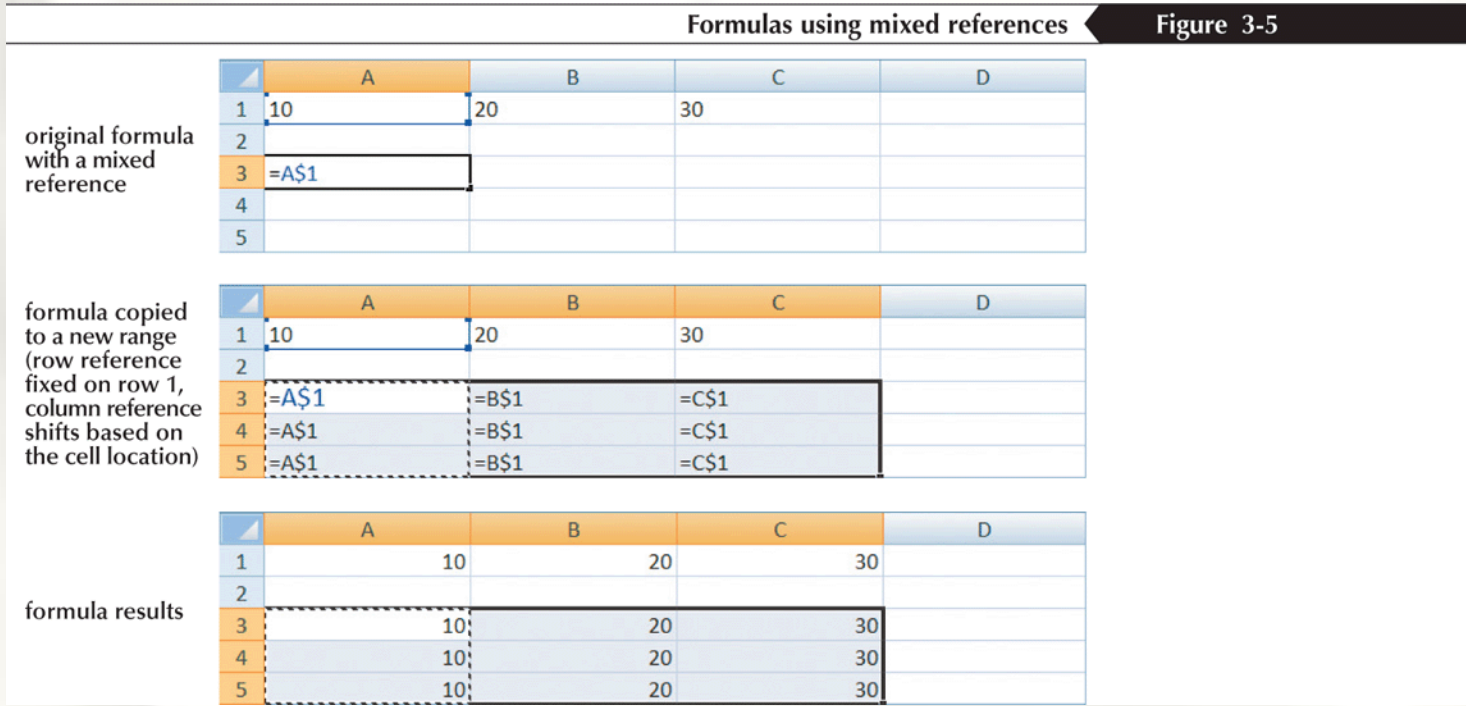
formula results

	A	B	C	D
1	10	20	30	
2				
3	10	20	30	
4				
5				

Using Absolute References



Using Mixed References



Understanding Function Syntax

Figure 3-7

Math, Trig, and Statistical functions

Function	Category	Description
AVERAGE(<i>number1</i> [, <i>number2</i> , <i>number3</i> , ...])	Statistical	Calculates the average of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references. Only <i>number1</i> is required. For more than one cell reference or to enter numbers directly into the function, use the optional arguments <i>number2</i> , <i>number3</i> , and so forth.
COUNT(<i>value1</i> [, <i>value2</i> , <i>value3</i> , ...])	Statistical	Counts how many cells in a range contain numbers, where <i>value1</i> , <i>value2</i> , and so forth are text, numbers, or cell references. Only <i>value1</i> is required. For more than one cell reference or to enter numbers directly into the function, use the optional arguments <i>value2</i> , <i>value3</i> , and so forth.
COUNTA(<i>value1</i> , [, <i>value2</i> , <i>value3</i> , ...])	Statistical	Counts how many cells are not empty in ranges <i>value1</i> , <i>value2</i> , and so forth, or how many numbers are listed within <i>value1</i> , <i>value2</i> , and so forth.
INT(<i>number</i>)	Math & Trig	Displays the integer portion of a number, <i>number</i> .
MAX(<i>number1</i> [, <i>number2</i> , <i>number3</i> , ...])	Statistical	Calculates the maximum value of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references.
MEDIAN(<i>number1</i> [, <i>number2</i> , <i>number3</i> , ...])	Statistical	Calculates the median, or middle, value of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references.
MIN(<i>number1</i> [, <i>number2</i> , <i>number3</i> , ...])	Statistical	Calculates the minimum value of a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references.
RAND()	Math & Trig	Returns a random number between 0 and 1.
ROUND(<i>number</i> , <i>num_digits</i>)	Math & Trig	Rounds a number to a specified number of digits, where <i>number</i> is the number you want to round and <i>num_digits</i> specifies how many digits to which you want to round the number.
SUM(<i>number1</i> [, <i>number2</i> , <i>number3</i> , ...])	Math & Trig	Adds a collection of numbers, where <i>number1</i> , <i>number2</i> , and so forth are either numbers or cell references.

Inserting a Function

- Click the Formulas tab on the Ribbon
- To insert a function from a specific category, click the appropriate category button in the Function Library group. To search for a function, click the Insert Function button in the Function Library group, enter a description of the function, and then click the Go button
- Select the appropriate function from the list of functions
- Enter the argument values in the Function Arguments dialog box, and then click the OK button



Inserting a Function

Figure 3-8 Function Arguments dialog box

Tip
You can click the Collapse Dialog Box button to shrink the Function Arguments dialog box to see more of the worksheet, select the range, and then click the Expand Dialog Box button to restore the dialog box.

The screenshot shows the 'Function Arguments' dialog box for the SUM function. The dialog box is titled 'Function Arguments' and contains the following elements:

- Function Name:** SUM
- Number1 (required argument):** D21:O21. A callout box labeled 'required argument' points to this field. A 'Collapse Dialog Box button' is located to the right of this field.
- Number2 (optional argument):** (empty). A callout box labeled 'optional argument' points to this field.
- Preview:** A list of values in the range: {2950,2950,2950,2950,2950,3800,3...} followed by '= number' and '= 37950'. A callout box labeled 'list of values in the range' points to the list, and another callout box labeled 'preview of the value returned by the function with the current argument values' points to the result.
- Description:** 'Adds all the numbers in a range of cells.' A callout box labeled 'description of the function' points to this text. Below it, a detailed description for 'Number1' is provided: 'Number1: number1,number2,... are 1 to 255 numbers to sum. Logical values and text are ignored in cells, included if typed as arguments.' A callout box labeled 'description of the Number1 argument' points to this text.
- Formula result:** = 37,950. A callout box labeled 'text that will be displayed in the worksheet' points to this result.
- Buttons:** OK and Cancel.
- Help:** A link 'Help on this function' is visible at the bottom left.

Inserting a Function

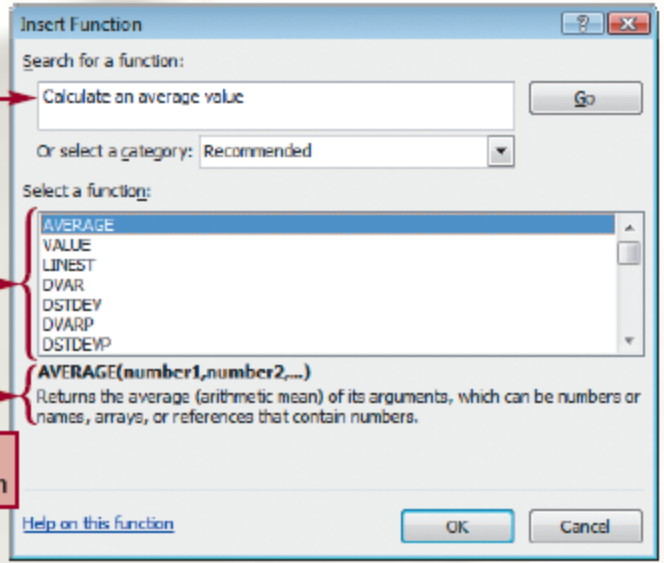
Figure 3-10 Insert Function dialog box

Tip
You can also open the Insert Function dialog box by clicking the Insert Function button on the formula bar.

description of function

list of functions that match the search description

syntax and description of the selected function



Typing a Function

- As you begin to type a function name within a formula, a list of functions that begin with the letters you typed appears

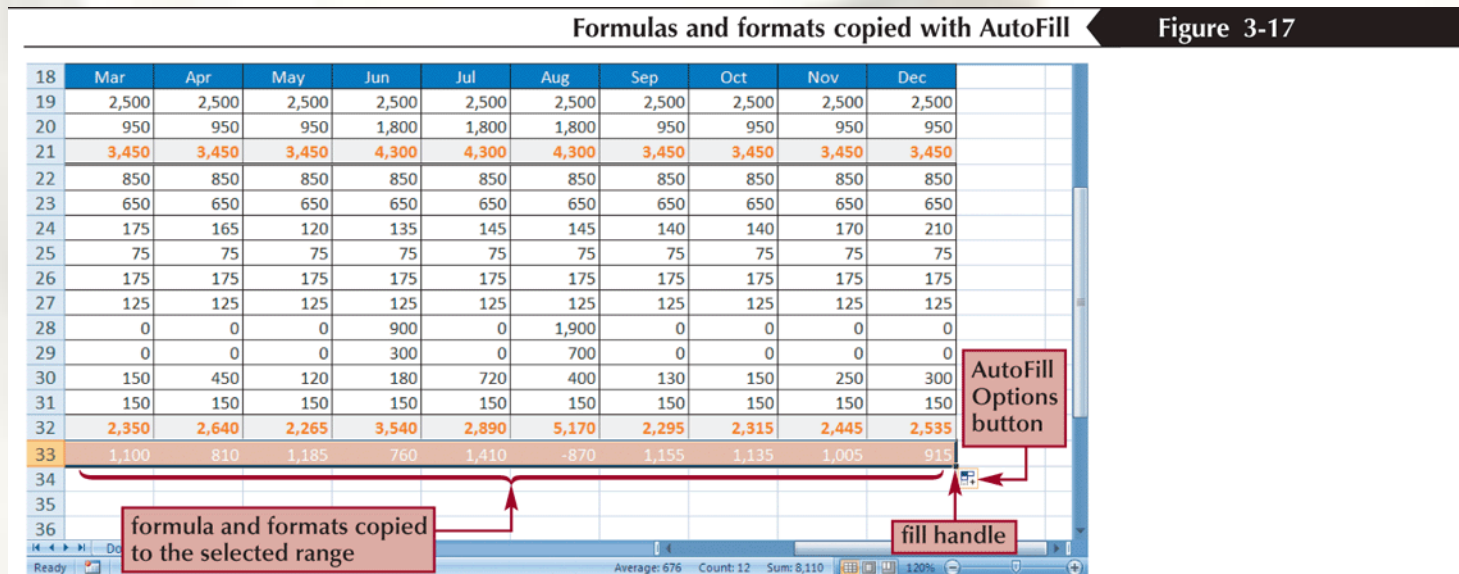
Figure 3-12 Typing a function

The screenshot shows an Excel spreadsheet with a function list dropdown open. The spreadsheet has a 'Year-End Summary' table and a 'Take-Home Pay & Expenses' table. The function list dropdown is open for the formula '=MI' in cell B11. The list shows functions starting with 'MI': MID, MIN, MINA, MINUTE, MINVERSE, and MIRR. A ScreenTip is visible for the selected 'MID' function, describing its purpose: 'Returns the characters from the middle of a text string, given a starting position and length'. Two red callout boxes with arrows point to the ScreenTip and the function list.

Year-End Summary		Total Take-Home Pay	37,950
		Monthly Average	3,163
		Monthly Minimum	=MI
		Monthly Maximum	
		Total Expenses	
		Monthly Average	
		Monthly Minimum	
		Monthly Maximum	

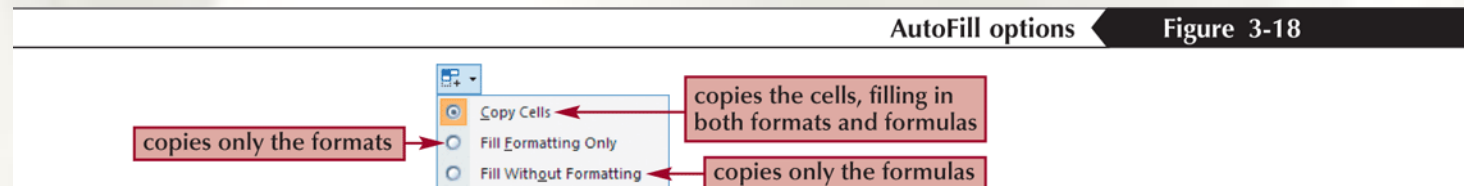
Take-Home Pay & Expenses		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Pay	Diane	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	
	Glenn	950	950	950	950	950	1,800	1,800	1,800	

Working with AutoFill



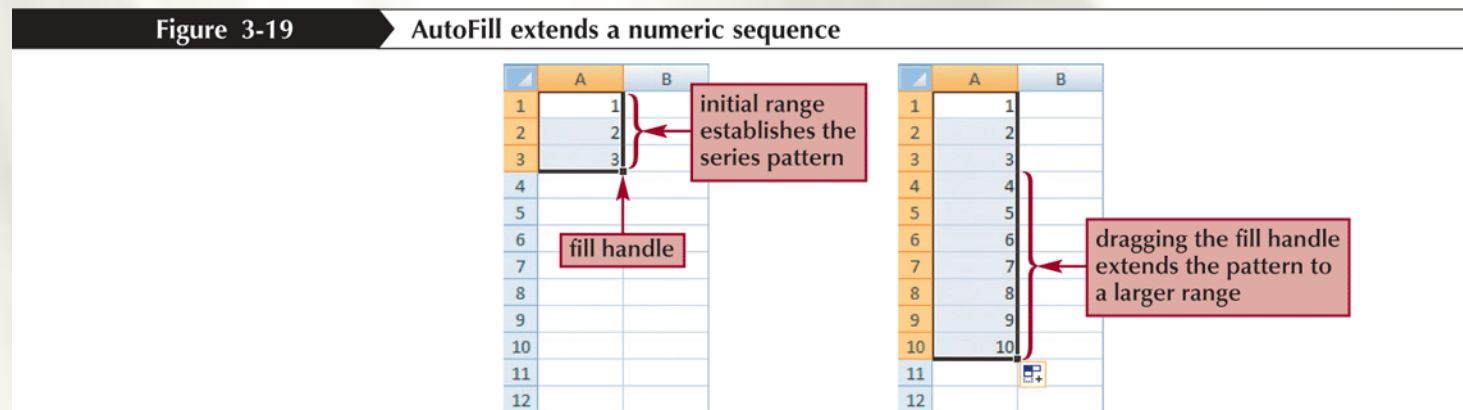
Using the AutoFill Options Button

- By default, AutoFill copies both the formulas and the formats of the original range to the selected range
- You can specify what is copied by using the AutoFill Options button that appears after you release the mouse button



Filling a Series

- AutoFill can also be used to create a series of numbers, dates, or text based on a pattern



Filling a Series

Figure 3-20 AutoFill applied to different series

Type	Initial Entry	Extended Series
Values	1, 2, 3	4, 5, 6, ...
	2, 4, 6	8, 10, 12, ...
Dates and Times	Jan	Feb, Mar, Apr, ...
	January	February, March, April, ...
	15-Jan, 15-Feb	15-Mar, 15-Apr, 15-May, ...
	12/30/2010	12/31/2010, 1/1/2011, 1/2/2011, ...
	12/31/2010, 1/31/2011	2/28/2011, 3/31/2011, 4/30/2011, ...
	Mon	Tue, Wed, Thu, ...
	Monday	Tuesday, Wednesday, Thursday, ...
	11:00AM	12:00PM, 1:00PM, 2:00PM, ...
Patterned Text	1st period	2nd period, 3rd period, 4th period, ...
	Region 1	Region 2, Region 3, Region 4, ...
	Quarter 3	Quarter 4, Quarter 1, Quarter 2, ...
	Qtr3	Qtr4, Qtr1, Qtr2, ...

Working with Logical Functions

- A **logical function** is a function that works with values that are either true or false
- The **IF function** is a logical function that returns one value if the statement is true and returns a different value if the statement is false
- $IF(\textit{logical_test}, \textit{value_if_true}, [\textit{value_if_false}])$



Working with Logical Functions

- A **comparison operator** is a symbol that indicates the relationship between two values

Comparison operators		Figure 3-27
Operator	Statement	Tests whether
=	A1 = B1	the value in cell A1 <i>is equal to</i> the value in cell B1
>	A1 > B1	the value in cell A1 <i>is greater than</i> the value in cell B1
<	A1 < B1	the value in cell A1 <i>is less than</i> the value in cell B1
>=	A1 >= B1	the value in cell A1 <i>is greater than or equal to</i> the value in cell B1
<=	A1 <= B1	the value in cell A1 <i>is less than or equal to</i> the value in cell B1
<>	A1 <> B1	the value in cell A1 <i>is not equal to</i> the value in cell B1

Working with Logical Functions

- =IF(A1="YES", "DONE", "RESTART")
- =IF(A1="MAXIMUM", MAX(B1:B10), MIN(B1:B10))
- =IF(D33>0, \$K\$10, 0)



Working with Logical Functions

Function arguments for the IF function

Figure 3-28

test condition that is either true or false

value returned if the condition is true

value returned if the condition is false

Function Arguments

IF

Logical_test: D33>0 = FALSE

Value_if_true: \$K\$10 = 800

Value_if_false: 0 = 0

Checks whether a condition is met, and returns one value if TRUE, and another value if FALSE.

Value_if_false is the value that is returned if Logical_test is FALSE. If omitted, FALSE is returned.

Formula result = 0

[Help on this function](#)

OK Cancel

Working with Date Functions

Date functions

Figure 3-31

Function	Description
DATE(<i>year, month, day</i>)	Creates a date value for the date represented by the <i>year</i> , <i>month</i> , and <i>day</i> arguments
DAY(<i>date</i>)	Extracts the day of the month from the <i>date</i> value
MONTH(<i>date</i>)	Extracts the month number from the <i>date</i> value where 1=January, 2=February, and so forth
YEAR(<i>date</i>)	Extracts the year number from the <i>date</i> value
WEEKDAY(<i>date, [return_type]</i>)	Calculates the day of the week from the <i>date</i> value, where 1=Sunday, 2=Monday, and so forth; to choose a different numbering scheme, set the optional <i>return_type</i> value to "1" (1=Sunday, 2=Monday, ...), "2" (1=Monday, 2=Tuesday, ...), or "3" (0=Monday, 1=Tuesday, ...)
NOW()	Displays the current date and time
TODAY()	Displays the current date

Working with Financial Functions

Figure 3-33

Financial functions for loans and investments

Function	Description
$FV(\text{rate}, \text{nper}, \text{pmt}, [\text{pv}=0], [\text{type}=0])$	Returns the future value of an investment, where <i>rate</i> is the interest rate per period, <i>nper</i> is the total number of periods, <i>pmt</i> is the payment in each period, <i>pv</i> is the present value of the investment, and <i>type</i> indicates whether payments should be made at the end of the period (0) or the beginning of the period (1)
$PMT(\text{rate}, \text{nper}, \text{pv}, [\text{fv}=0], [\text{type}=0])$	Calculates the payments required each period on a loan or investment
$IPMT(\text{rate}, \text{per}, \text{nper}, \text{pv}, [\text{fv}=0], [\text{type}=0])$	Calculates the amount of a loan payment devoted to paying the loan interest, where <i>per</i> is the number of the payment period
$PPMT(\text{rate}, \text{per}, \text{nper}, \text{pv}, [\text{fv}=0], [\text{type}=0])$	Calculates the amount of a loan payment devoted to paying off the principal of a loan, where <i>per</i> is the number of the payment period
$PV(\text{rate}, \text{nper}, \text{pmt}, [\text{fv}=0], [\text{type}=0])$	Calculates the present value of a loan or investment based on periodic, constant payments
$NPER(\text{rate}, \text{pmt}, \text{pv}, [\text{fv}=0], [\text{type}=0])$	Calculates the number of periods required to pay off a loan or investment
$RATE(\text{nper}, \text{pmt}, \text{pv}, [\text{fv}=0], [\text{type}=0])$	Calculates the interest rate of a loan or investment based on periodic, constant payments

Using the PMT Function to Determine a Monthly Loan Payment

- For loan or investment calculations, you need to know the following information:
 - The annual interest rate
 - The payment period, or how often payments are due and interest is compounded
 - The length of the loan in terms of the number of payment periods
 - The amount being borrowed or invested
- $\text{PMT}(\text{rate}, \text{nper}, \text{pv}, [\text{fv}=0] [\text{type}=0])$



Using the PMT Function to Determine a Monthly Loan Payment

Function Arguments dialog box for the PMT function

Figure 3-35

The screenshot shows the 'Function Arguments' dialog box for the PMT function. The dialog has a title bar with a question mark and a close button. The main area is titled 'PMT' and contains five input fields with their corresponding values and data types:

Argument	Value	Data Type
Rate	B5	0.005416667
Nper	B7	240
Pv	B8	160000
Fv		number
Type		number

Below the input fields, the calculated result is shown as $= -1192.917017$. A descriptive text reads: 'Calculates the payment for a loan based on constant payments and a constant interest rate.' A note explains: 'Fv is the future value, or a cash balance you want to attain after the last payment is made, 0 (zero) if omitted.' At the bottom, the 'Formula result' is $= -1192.917017$. There are 'OK' and 'Cancel' buttons, and a link to 'Help on this function'.

Using the PMT Function to Determine a Monthly Loan Payment

Figure 3-36 Monthly payment for a \$160,000 loan

The screenshot shows an Excel spreadsheet titled "Drake Family Budget - Microsoft Excel". The spreadsheet contains the following data:

	A	B	E	F	G	H	I
1	Home Loan						
2							
3	Annual Interest Rate	6.50%					
4	Interest Payments per Year	12					
5	Interest Rate per Period	0.0054167					
6	Number of Years	20					
7	Number of Payments	240					
8	Loan Amount	160,000					
9	Monthly Loan Payment	\$1,192.92					
10							

Annotations in the image:

- A red box with an arrow pointing to the formula bar containing `=PMT(B5,B7,B8)` is labeled "PMT function entered in cell B9".
- A red box with an arrow pointing to the value **\$1,192.92** in cell B9 is labeled "value returned by the PMT function".