



Lab 09
More on Spreadsheets
MS Excel



Objectives

- The students should understand and have hands on experience in
 - Working with formulas and functions
 - Charting excel data
 - Printing excel worksheet



Working with Formulas and Functions



Working with Formulas and Functions

- In this section, we will learn how to
 - Build any formula from scratch
 - Quickly sum a series of cells with a single toolbar command
 - Control the order of the formula operations
 - Copy a formula to multiple locations
 - Use Excel's built in functions to perform a variety of calculations

Working with Formulas

Microsoft Excel - Book2.xls

1. Click the cell where you want the results of the formula to appear.

2. Type = then click the first cell to be referenced in the formula.

3. Type an arithmetic operator, then click the next cell you want to reference in the formula.

4. Press the Enter key when the formula is complete.

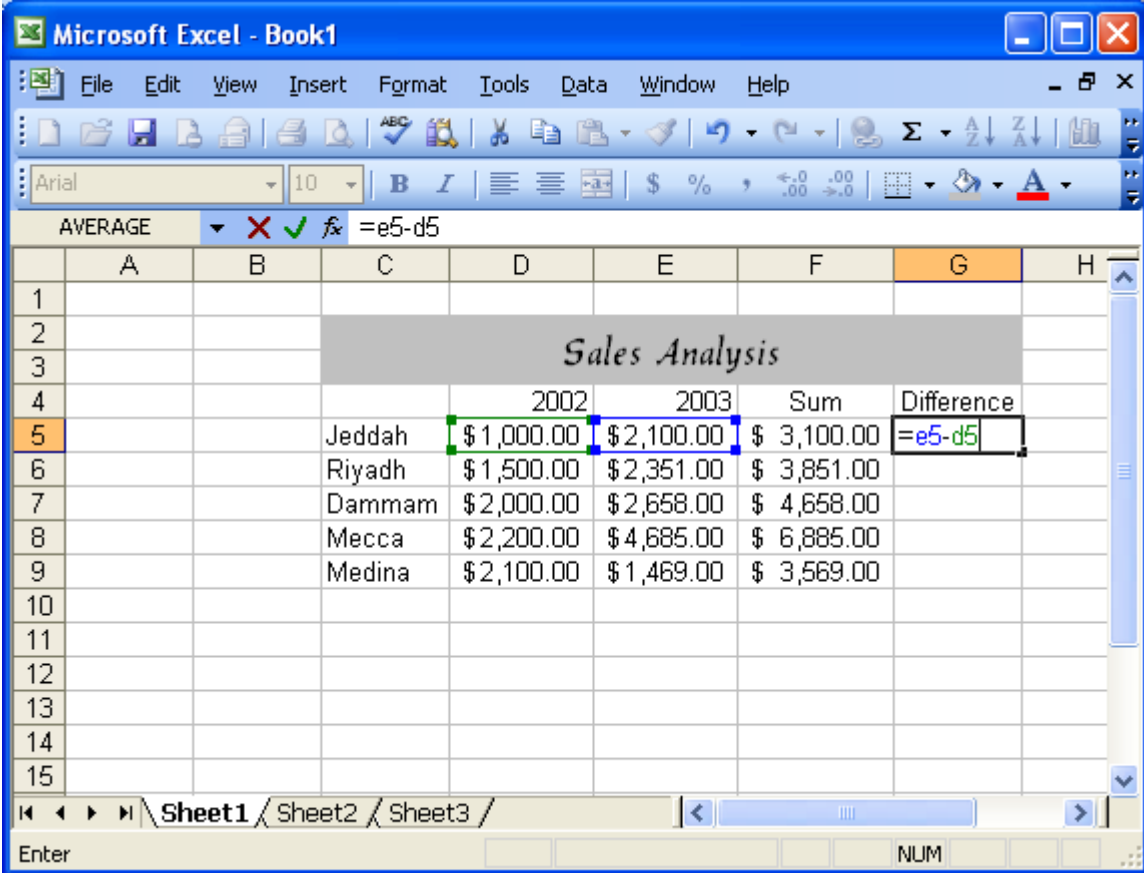
5. To edit a formula after you've pressed the Enter key, click the cell, then click the Formula bar. Type your correction, then press the Enter key to complete your entry.

	A	B	C	D	H	I
1						
2		Income	5428.06			
3		Expense	1802			
4		Net income	=C2-C3			
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Point NUM

Working with Formulas

- Another example
- Here the formula ‘=E5 - D5’ is written in the cell G5



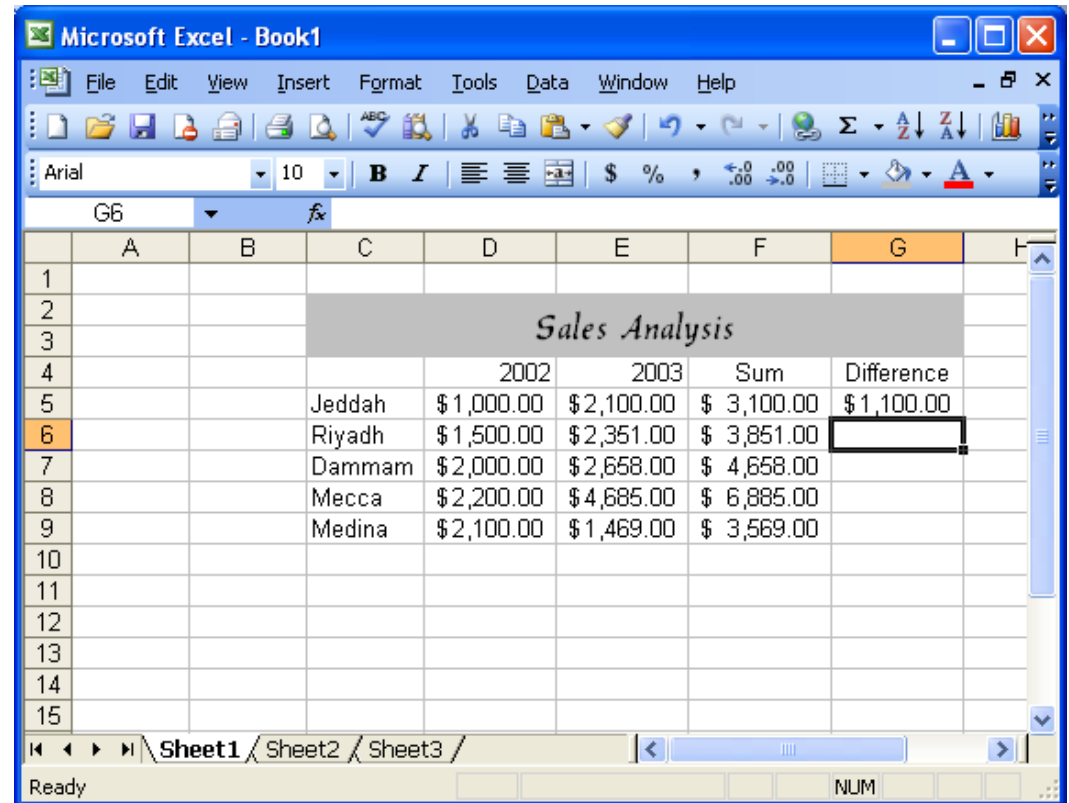
The screenshot shows the Microsoft Excel interface with a spreadsheet titled "Microsoft Excel - Book1". The spreadsheet contains a table with the following data:

	A	B	C	D	E	F	G	H	
1									
2			<i>Sales Analysis</i>						
3									
4				2002	2003	Sum	Difference		
5			Jeddah	\$ 1,000.00	\$ 2,100.00	\$ 3,100.00	=E5-D5		
6			Riyadh	\$ 1,500.00	\$ 2,351.00	\$ 3,851.00			
7			Dammam	\$ 2,000.00	\$ 2,658.00	\$ 4,658.00			
8			Mecca	\$ 2,200.00	\$ 4,685.00	\$ 6,885.00			
9			Medina	\$ 2,100.00	\$ 1,469.00	\$ 3,569.00			
10									
11									
12									
13									
14									
15									

The formula bar shows the formula `=E5-D5` entered in cell G5. The status bar at the bottom shows "Enter" and "NUM".

Working with Formulas

- This figure shows result of the formula.



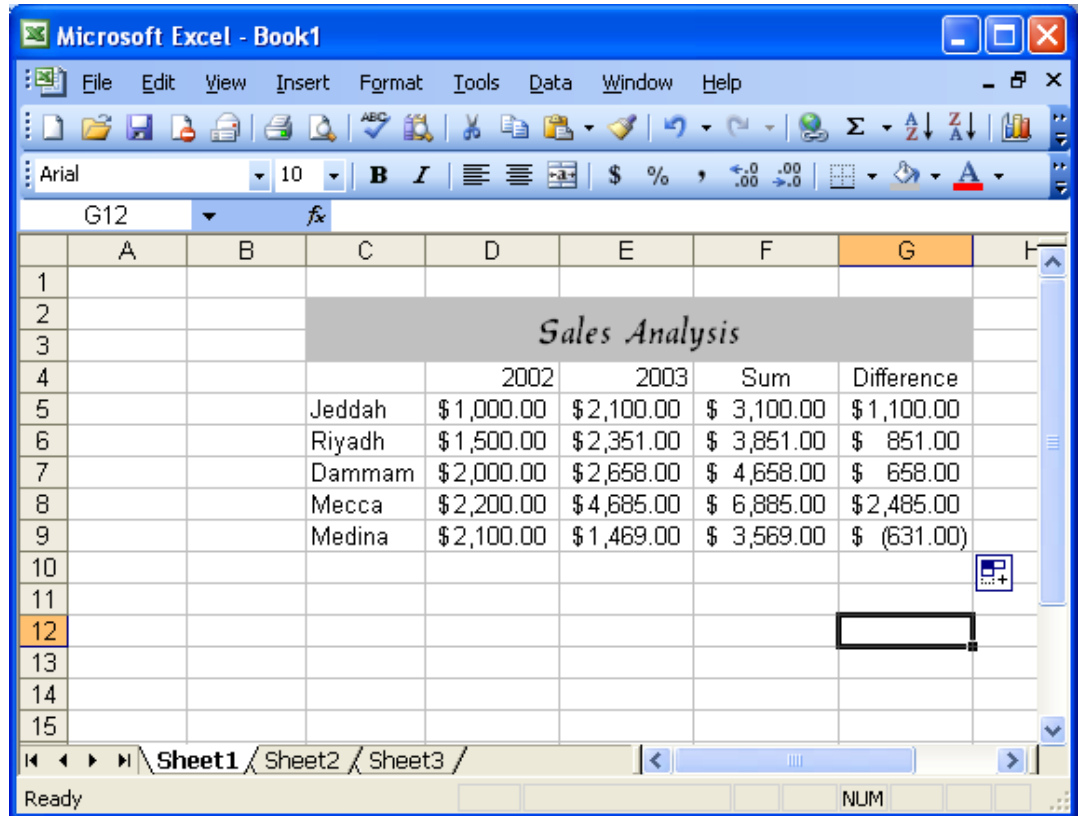
The screenshot shows a Microsoft Excel window titled "Microsoft Excel - Book1". The spreadsheet contains a table with the following data:

	A	B	C	D	E	F	G	H	
1									
2			<i>Sales Analysis</i>						
3									
4				2002	2003	Sum	Difference		
5			Jeddah	\$ 1,000.00	\$ 2,100.00	\$ 3,100.00	\$ 1,100.00		
6			Riyadh	\$ 1,500.00	\$ 2,351.00	\$ 3,851.00			
7			Dammam	\$ 2,000.00	\$ 2,658.00	\$ 4,658.00			
8			Mecca	\$ 2,200.00	\$ 4,685.00	\$ 6,885.00			
9			Medina	\$ 2,100.00	\$ 1,469.00	\$ 3,569.00			
10									
11									
12									
13									
14									
15									

The formula bar shows the active cell is G6, and the status bar at the bottom indicates the active cell contains a numerical value (NUM).

Working with Formulas

- This figure shows the “**Difference**” column in which the formula has been copied to all the cells in the column.



The screenshot shows a Microsoft Excel window titled "Microsoft Excel - Book1". The spreadsheet contains a table with the following data:

Sales Analysis						
		2002	2003	Sum	Difference	
	Jeddah	\$ 1,000.00	\$ 2,100.00	\$ 3,100.00	\$ 1,100.00	
	Riyadh	\$ 1,500.00	\$ 2,351.00	\$ 3,851.00	\$ 851.00	
	Dammam	\$ 2,000.00	\$ 2,658.00	\$ 4,658.00	\$ 658.00	
	Mecca	\$ 2,200.00	\$ 4,685.00	\$ 6,885.00	\$ 2,485.00	
	Medina	\$ 2,100.00	\$ 1,469.00	\$ 3,569.00	\$ (631.00)	

The "Difference" column (G) contains the calculated values for each row. The formula bar shows the active cell is G12, and the status bar at the bottom indicates "Ready" and "NUM".

Working with Functions

2. Click here to open the Insert Function dialog box.

1. Click the cell where you want to place the function.

3. Select the function category.

4. Select a function.

5. Click the OK button. (continued on next page)

	A	B	C	D
1				
2		Sales by State	Year	Current Year
3		Michigan	1508	1700
4		Wisconsin	3057	3160
5		Illinois	5717	5900
6		Minnesota	1802	2300
7		Indiana	2700	2900
8		Ohio	1988	2100
9		Total	16722	18200
10		Average	=	
11				
12				
13				
14				

Microsoft Excel - Average.xls

Insert Function

Search for a function:

Type a brief description of what you want to do and then click Go

Go

Or select a category: Statistical

Select a function:

- AVEDEV
- AVERAGE**
- AVERAGEA
- BETADIST
- BETAINV
- BINOMDIST
- CHIDIST

AVERAGE(number1,number2,...)
Returns the average (arithmetic mean) of its arguments, which can be numbers or names, arrays, or references that contain numbers.

OK Cancel

Sheet1 / Sheet2 / Sheet3 /

NUM

Working with Functions (continued)

Microsoft Excel - Average.xls

Function Arguments

AVERAGE

Number1 C3:C8 = {1508;3057;5717;16

Number2 = number

= 2787

Returns the average (arithmetic mean) of its arguments, which can be numbers or names, arrays, or references that contain numbers.

6. Click this link for more information about this function.

Formula result = 2787

Help on this function

OK Cancel

7. Select cells if prompted to do so.

8. Click the OK button to complete the function.

	A	B	C
1			
2	Sales by State		Previous Year
3		Michigan	
4		Wisconsin	
5		Illinois	
6		Minnesota	
7		Indiana	
8		Ohio	1938 2130 2200
9		Total	16722 18276 34998
10		Average	=AVERAGE(C3:C8)

Sheet1 / Sheet2 / Sheet3 /

start Microsoft Excel - Ave... 3:30 PM

How to use the AutoSum button?

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

- File Name:** Microsoft Excel - Sales by Region.xls
- Menu Bar:** File, Edit, View, Insert, Format, Tools, Data, Window, Help
- Toolbar:** Includes the AutoSum button (Σ) with a yellow callout pointing to it.
- Formula Bar:** Shows the formula `=SUM(D3:D8)`.
- Spreadsheet Data:**

		D	E	F
		Current Year	Projected % Increase	
3	Northeast	48562	50307	1.0359334
4	Southeast	31277	40187	1.0231687
5	Midwest	22071	23772	1.0393948
6	Gulf	15873	16818	1.059535
7	Northwest	37445	39174	1.0461743
8	Southwest	52990	56711	1.0702207
9	Total	217018	=SUM(D3:D8)	
- Callouts:**
 - 1. Click the cell at the bottom of a column of numbers or at the right end of a row of numbers.
 - 2. Click the AutoSum button.
 - 3. The Sum formula references a range of cells, which, in this case, is D3:D8 (all cells from D3 through D8).
 - 4. If the Sum formula is correct, press the Enter key to complete the calculation.
- Formula Help:** A tooltip shows the syntax: `SUM(number1, [number2], ...)`

Relative vs. Absolute Addressing

1. The original formula =B4*C1 works correctly in cell C4.

2. When the formula is copied to cell C5, the relative references in the formula are changed to =B5*C2 and no longer refer to the correct cells. Cell C2 is blank, so the formula calculates the result as \$153,802*0, or 0.

3. When the formula is copied to cell C6, it changes to =B6*C3 and again no longer refers to the correct cells. Cell C3 contains a label, so the result is a #VALUE! error.

4. When the formula is copied to cell C7, the formula changes to =B7*C4. This formula does not refer to the correct cells and produces a result that is too large to fit in the cell.

	A	B	C
1	Sales Commissions		0.12
2			Base
3	Sales Person	Total Sales Commission	Pay
4	Aho, Jennifer	\$ 176,215	\$ 21,146
5	Cook, Pamela	\$ 153,802	\$ -
6	Delman, Amy	\$ 110,000	#VALUE!
7	Gyrog, Mike	\$ 183,011	#####
8	Horiuchi, Kotaro	\$ 196,231	\$ -
9	Lahiri, Nyanjot	\$ 168,923	#VALUE!
10	Oliver, Deby	\$ 148,332	#####
11	Schuda		
12	Trout, P		
13	Valenti		
14			
15			
16			

Relative vs. Absolute Addressing - Example

The screenshot shows a Microsoft Excel window titled "Microsoft Excel - exercise". The formula bar displays the formula `=D5/D10`. The spreadsheet contains a table with the following data:

	A	B	C	D	E	F	G	H	I	J	
1											
2			<i>Sales Analysis</i>								
3											
4				2002	2003	Sum	Difference	Percentage Sales 2002	Percentage Sales 2002		
5			Jeddah	\$ 1,000.00	\$ 2,100.00			=D5/\$D\$10			
6			Riyadh	\$ 1,500.00	\$ 2,351.00			17%			
7			Dammam	\$ 2,000.00	\$ 2,658.00			23%			
8			Mecca	\$ 2,200.00	\$ 4,685.00			25%			
9			Medina	\$ 2,100.00	\$ 2,469.00			24%			
10			Total	\$ 8,800.00	\$ 14,263.00			100%			
11											
12											
13											

The formula bar shows the formula `=D5/D10`. The cell D5 is highlighted with a blue border, and the cell D\$10 is highlighted with a green border. The formula bar also shows the text "AVERAGE" and a dropdown menu with a red 'X' and a green checkmark.

Formula References

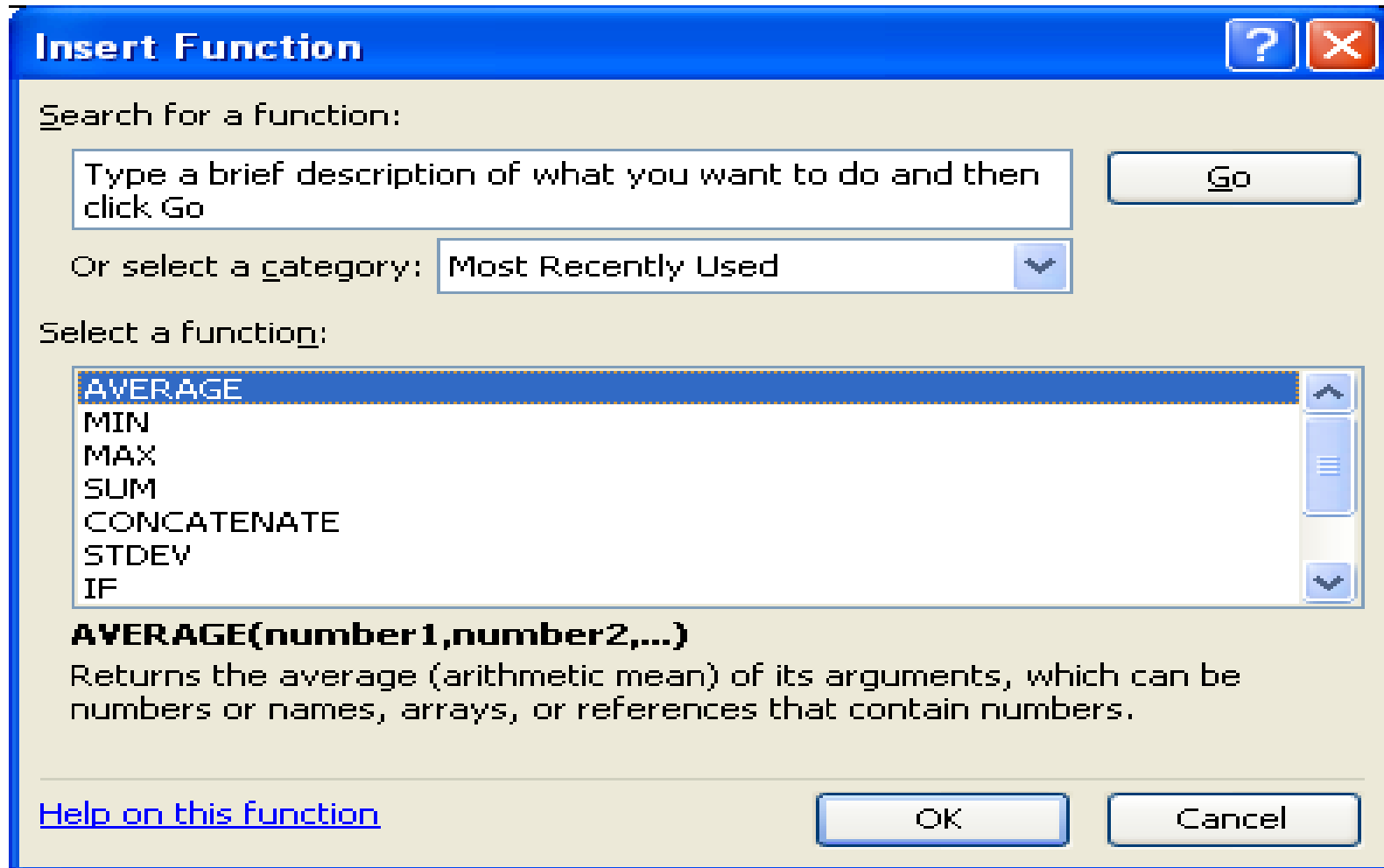
- Formulas across different worksheets

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

- Title Bar:** Microsoft Excel - exercise
- Menu Bar:** File, Edit, View, Insert, Format, Tools, Data, Window, Help
- Toolbar:** Standard toolbar with icons for file operations, editing, and formatting. The status bar shows 100% zoom.
- Formula Bar:** Contains the formula `=Sheet2!E7+Sheet1!D7+Sheet1!D5+Sheet1!E5`.
- Worksheet:** Sheet3 is active. The grid shows columns A through K and rows 1 through 14. A grey shaded area from row 4 to 6, column C to H contains the text *Sum of the sales of all the years*.
- Data Table:** A table of sales data is located in the following cells:

7			Jeddah	=Sheet2!E7+Sheet1!D7+Sheet1!D5+Sheet1!E5							
8			Riyadh	\$ 8,402.00							
9			Dammam	\$ 9,416.00							
10			Mecca	\$20,370.00							
11			Medina	\$ 7,038.00							
- Sheet Navigation:** The bottom status bar shows navigation arrows and the sheet names: Sheet1, Sheet2, Sheet3.

Working with Functions



Sorting data in a worksheet

1. Select the rows and columns containing the data you want to sort.

2. Click Data, then click Sort to open the Sort dialog box.

Sort Ascending and Sort Descending buttons.

3. Select the columns to sort by.

4. Click the OK button to sort the selected rows and columns.

	Description	Product #	Size
4	Ancient Burden Gargoyle	977	4"W
5	Dwarf Dragon Gargoyle	877	3"W
6	Dwarf Dragon Gargoyle	877	3"W
7	Dwarf Florentine Gargoyle	878	2"W
8	Dwarf Gnawing Gargoyle	994	3"W
9	Dwarf Gothic Griff	741	3"W
10	Gargoyle Candelabra	782	3"W
11	Gothic Gargoyle Snow Globe	792	3"W
12	Guardian of the Flame Gargoyle	736	3"W
13	Guardians of the Gate Gargoyle	877	3"W
14	Keeper of the Castle Gargoyle	877	3"W
15	Keeper of the Castle Gargoyle	877	3"W



Charting Excel Data

Charting Excel Data

- In this section, we will learn
 - Charting terminology
 - Various chart types
 - To choose a right type of chart for the data
 - To build a useful and attractive chart
 - To format chart for dynamic visual effects
 - To print workbook and worksheets

Charting Terminology

- Chart axes
Chart's data is plotted along a vertical value axis and horizontal category axis
- The legend
A legend explains the data represented
- Title
There can be a title for the chart and a title for each axis
- Gridlines
- Plot area
Portion of the chart where the data is plotted
- Data points --- each number in the worksheet
- Data series --- a logical collection of related data points

Various Chart Types

- ❑ Line charts and column charts are good choices for showing trends.
- ❑ Pie, bar, column, doughnut, and area charts are best for showing comparisons.
- ❑ Column charts can be used to show frequency.
- ❑ Scatter charts can be used to show a distribution of data. In a scatter chart, each dot indicates a response or an occurrence of an event.

Creating charts

1. Select the cells containing data to be included in the chart.

2. Click the Chart Wizard button.

3. Select the chart type and sub-type, then click the Next button.

4. Read the chart type description to confirm that you chose the correct chart type.

5. Select Rows or Columns according to the layout of the data, then click the Next button.
(continued)

	A	B	C
1			
2	Region		
3	North		
4	East		
5	South		
6	West		
7			

Chart Wizard - Step 1 of 4 - Chart Type

Standard Types Custom Types

Chart types:

- Column
- Bar
- Line
- 3D (Scatter)
- Area
- Doughnut
- Radar

Chart sub-types:

- Clustered Column, Compares values across categories.

Press and hold to view Sample

Cancel < Back Next > Finish

Sum=830546 NUM

Creating charts

6. Enter the chart title here.

7. Use the other tabs to enhance the chart as needed.

8. Click here to create the chart on a new worksheet tab.

9. Click here to create the chart in the current worksheet.

10. Click the Finish button to complete the chart.

11. The bars on the chart reflect the values currently entered in worksheet cells.

Region	Sales
West	240,000
East	200,000
South	180,000
North	220,000

Updating and Changing Charts

- When the data is changed, the chart is updated automatically provided the chart is in the same worksheet or in a different worksheet of the same workbook.
- If you need to modify the range of the cells in the chart choose **Chart → Source Data**
- If you want to add to the existing range choose **Chart → Add Data**



Previewing and Printing a Worksheet

Print Preview and Page setup

The screenshot shows the Microsoft Excel Print Preview window for the file GARGOYLE.XLS. The window title bar includes the file name and standard window controls. Below the title bar is a menu bar with buttons for Next, Previous, Zoom, Print..., Setup..., Margins, Page Break Preview, Close, and Help. The main area displays a preview of a worksheet with a table of data. Four yellow callout boxes with arrows point to specific buttons and actions:

- 1. Click the Zoom button for a closer look at the contents of the worksheet.
- 2. Click the Print button when you are ready to print the worksheet.
- 3. Click the Margins button, then drag the margin lines to manually adjust the page margins.
- 4. Click the Close button to close the print preview.

The worksheet preview shows a table with columns for 'Date', 'Margin', 'Amount', 'Date', and 'Amount'. The first row is highlighted in grey and contains the text 'Go to Gargoyl Collectors'. Below this, there are several rows of data with dates and monetary values. The status bar at the bottom indicates 'Preview: Page 1 of 1' and 'NUM'.

Print Preview and Page setup

1. Click the Setup button to display the Page Setup dialog box.

2. The Portrait option means the worksheet will print in the normal or vertical position.

3. Click the Landscape option on the Page tab to print the worksheet sideways on the paper.

4. Use this Fit to setting to print the worksheet on a single page.

5. Click the OK button to close the Page Setup dialog box.

Microsoft Excel - GARGOYLE.XLS

Print... Setup... Margins Page Break Preview Close Help

Page Setup

Page Margins Header/Footer Sheet

Orientation

Portrait Landscape

Scaling

Adjust to: 100 % normal size

Fit to: page(s) wide by tall

Paper size: Letter

Print quality: 300 dpi

First page number: All

OK Cancel

Preview: Page 1 of 1

Headers and Footers

1. Click View, then click Header and Footer to display the Page Setup dialog box.

2. You can select predefined headers from the Header pull-down list.

3. Click the Custom Header button to create a custom header.

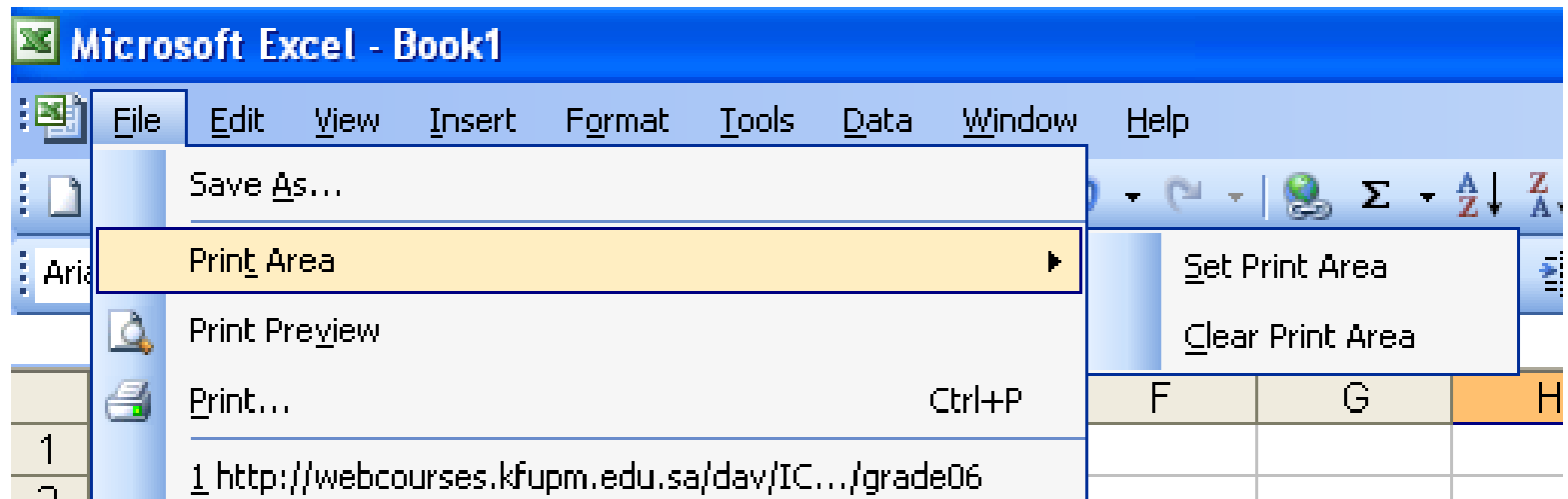
4. Click the Left, Center, or Right header section and type the header text.

5. Click these buttons to add special text, such as the date, the time, or a file name.

Item	
Lamb shanks	L
Messia Burgess	E

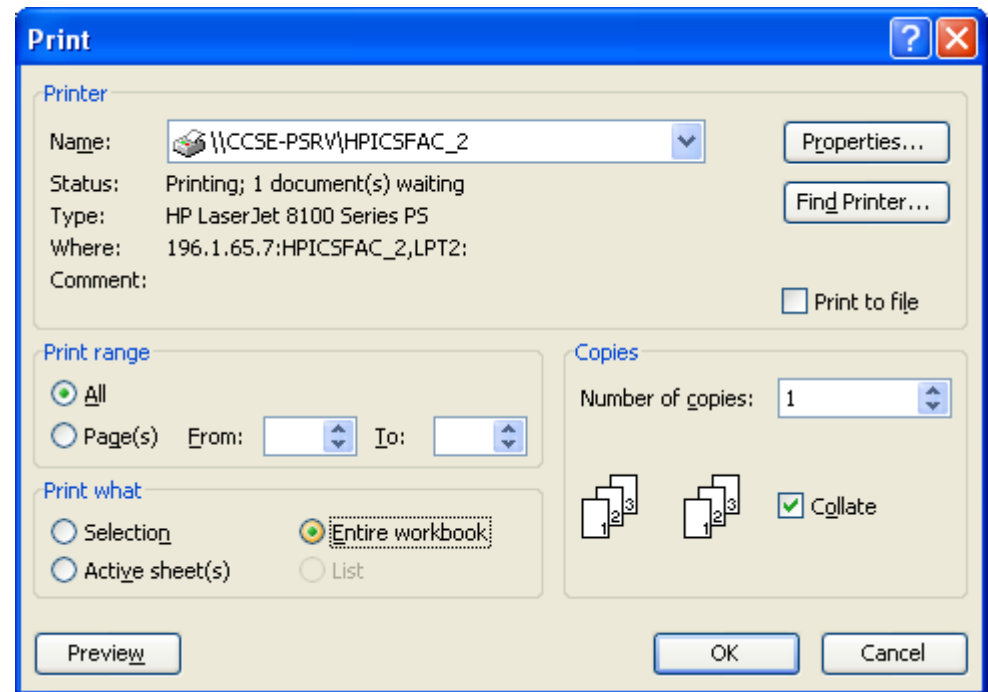
Printing a Worksheet

- Setting the print area
 - MS Excel allows you to print only a portion of your worksheet. It can be done by setting a print area.
 - To set a print area, select the portion of the worksheet you want to print then choose
File → Print Area → Set Print Area



Printing Workbook and Worksheets

- ❑ To print the entire workbook choose File → Print and check the Entire workbook radio button.
- ❑ You can preview by clicking the Preview button.



Printing Active Worksheets

