Functions,
Formatting Worksheets and Creating Charts

Functions: A better way of using Excel Power

Excel includes hundreds of other functions that you can use to calculate results used in statistics, finance, engineering, Mathematics, and other fields.

Functions are structured programs that calculate a specific result: a total, an average, the amount of a monthly loan payment, or the geometric mean of a group of numbers. Each function has a specific order or syntax that must be used for the function to work, properly.

Functions are formulas, so all functions begin with the equal sign (=). After that is the function name, followed by one or more arguments separated by commas and enclosed in parentheses:

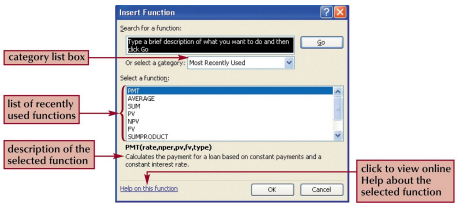
Example:
= SUM(D6:D11)

Functions

Excel's functions are grouped into 10 categories

Category	Examples
Financial	Calculates interest rates, loan payments, depreciation amounts, etc.
Date and Time	Returns the current hour, day of week or year, time, or date.
Maths and Trignometrical	Calculates absolute values, cosines, logarithms, etc.
Statistical	includes common functions used for totals, averages, and high and low numbers in a range; advanced functions for tests, deviation etc.
Lookup and reference	Searches for and returns values from a range; creates hyperlinks to net work or internet documents.
Database	Calculates values in an Excel database table.
Text	Converts text to upper or lower case, trims characters from the right or left end of a text string, concatenates text strings.
Logical	Evaluates an expression and returns a value of TRUE or FALSE, used to trigger other actions or formatting.
Information	Returns information from Excel or Windows about the current status of a cell, object, or the environment.
Engineering	Included with Office, but must be installed separately from the Analysis Toolpack.

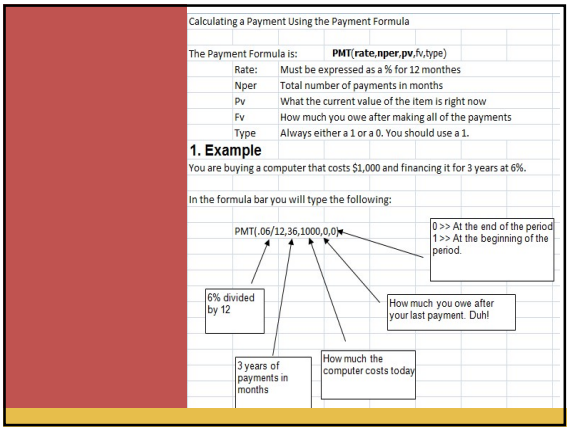
Insert Functions



1. Used to ensure a formula is entered with the correct syntax.
2. Allows browse to values as the formula is written.

Financial Functions

Function	Description
PMT(*rate*, *nper*, *pv*, [*fv*=0], [*type*=0])	Calculates the payments required each period on a loan or investment, where *rate* is the interest rate per period, *nper* is the total number of periods, *pv* is the present value or principal of the loan, *fv* is the future value of the loan, and *type* indicates whether payments should be made at the end of the period (0) or the beginning (1)
PV(*rate*, *nper*, *pmt*, [*fv*=0], [*type*=0])	Calculates the present value of a loan or investment based on periodic, constant payments
NPER(*rate*, *pmt*, *pv*, [*fv*=0], [*type*=0])	Calculates the number of periods required to pay off a loan or investment
RATE(*nper*, *pmt*, *pv*, [, *fv*=0], [*type*=0])	Calculates the interest rate of a loan or investment based on periodic, constant payments



Financial Functions

NPV Function

Calculates the net present value of an investment by using a discount rate and a series of future payments (negative values) and income (positive values).

	A	B
1	Data	Description
2	10%	Annual discount rate
3	-10,000	Initial cost of investment one year from today
4	3,000	Return from first year
5	4,200	Return from second year
6	6,800	Return from third year
	Formula	Description (Result)
	=NPV(A2, A3, A4, A5, A6)	Net present value of this investment (1,188.44)

Financial Functions

PMT Function

Calculates the payment for a loan based on constant payments and a constant interest rate.

A	B
Data	Description
6%	Annual interest rate
18	Years you plan on saving
50,000	Amount you want to have save in 18 years
Formula	Description (Result)
=PMT(A2/12, A3*12, 0, A4)	Amount to save each month to have 50,000 at the end of 18 years (-129.08)

Financial Functions

RATE Function

Returns the interest rate per period of an annuity. RATE is calculated by iteration and can have zero or more solutions.

A	B
Data	Description
4	Years of the loan
-200	Monthly payment
8000	Amount of the loan
Formula	Description (Result)
=RATE(A2*12, A3, A4)	Monthly rate of the loan with the above terms (1%)
=RATE(A2*12, A3, A4)*12	Annual rate of the loan with the above terms (0.09241767 or 9.24%)

Financial Functions

FV Function

Returns the future value of an investment based on periodic, constant payments and a constant interest rate.

A	B
Data	Description
6%	Annual interest rate
10	Number of payments
-200	Amount of the payment
-500	Present value
1	Payment is due at the beginning of the period (see above)
Formula	Description (Result)
=FV(A2/12, A3, A4, A5, A6)	Future value of an investment with the above terms (2581.40)

Financial Functions

PV Function

Returns the present value of an investment. The present value is the total amount that a series of future payments is worth now.

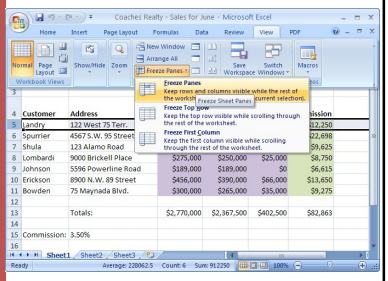
A	B
Data	Description
500	Money paid out of an insurance annuity at the end of every month
8%	Interest rate earned on the money paid out
20	Years the money will be paid out
Formula	Description (Result)
=PV(A3/12, 12*A4, A2, , 0)	Present value of an annuity with the terms above (-59,777.15).

Restructuring Worksheet

FREEZE PANES

If you have a large worksheet with column and row headings, those headings will disappear as the worksheet is scrolled.

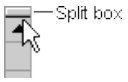
By using the Freeze Panes feature, the headings can be visible during editing.



Splitting Panes

You can split any sheet in a workbook horizontally, vertically, or both vertically and horizontally.

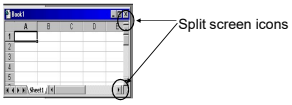
Splitting sheets into panes offers synchronized scrolling capability.



- Splitting a window allows you to work on multiple parts of a large spreadsheet simultaneously
- Freezing the pane allows you to always keep one part of the spreadsheet (e.g., column or row labels) visible

Splitting Panes

1. Drag the split horizontal and split vertical icons to the desires positions
2. Click on the freeze pane icon from the tool bar to freeze the panes



Exercise

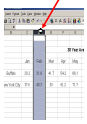
1. Split the screen so that:
   - The row with column labels shows up in the top pane
   - The column with store names show up in the left pane
2. Freeze the panes

Formatting Worksheet

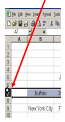
Remember that before you do any formatting, you must SELECT (highlight) the items to be formatted.

- To select individual cells, just click on them
- To select adjacent cells. Click and drag to include them
- To select several cells which are not adjacent, hold down the Ctrl key and click on each cell to include.

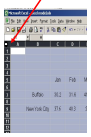
- Select a column



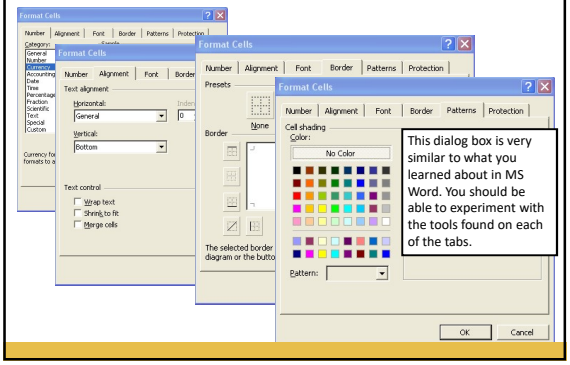
- Select a row



- To select the entire worksheet click upper left corner



Formatting Dialog box



Formatting Dialog box

- **Number** tab – enables you to specify the type of value contained in a cell and how it should be displayed.
- **Alignment** tab - you may align text within the cells either horizontally or vertically and then choose left, center, right, justify or centered.
- **Fonts** tab – you may format the size, colour, style, and font family to be used.
- **Border** tab - enables you to create a border around a cell or range.
- **Fill** tab - lets you choose a different color to shade the cell or range

Formatting Dialog box

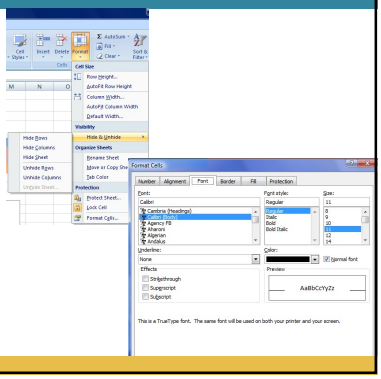
- **General** - the default format for numeric entries and displays the way it was entered.
- **Number** - displays a number without the thousands separator comma and with any number of decimal places.
- **Currency** - displays a number with the 1000 separator comma and an optional dollar sign and negative values (in red or minus sign).
- **Accounting** - displays a number with the thousand separation, optional dollar sign (leftmost aligned) negative values in ( ) and zero values as hyphens.
- **Date** - displays a date in various date formats.

Formatting Dialog box

- **Time** - displays the time in various time formats.
- **Percentage** - the number is multiplied by 100 before is displayed with a % sign.
- **Fraction** - displays a number as a fraction such as ¼.
- **Scientific** - displays a number as a decimal followed by the exponent of base 10.
- **Text** - left aligns the entry; useful for numbers that are not used in calculations such as zip codes.
- **Special** - displays a number with extra characters such as ( ) around a phone number area code.
- **Custom** - allows you to develop your own formats.

Format Cell

The Format Cells dialog box has separate pages for Number, Alignment, Font, Border, Patterns, and Protection.

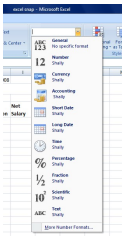


Formatting Fonts

You can also change the look of a font by changing its color, style, and size.

You can apply these font formatting options to the entire contents of a cell or range, or you can apply them to selected characters within a cell.

The complete font formatting options are available on the ***Font*** tab of the **Format Cells** dialog box.

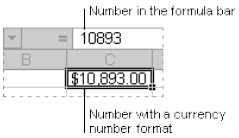


Fonts

You can change:

- Font
- Font style
- Size
- Color
- Underline
- Effects

Formatting Numbers

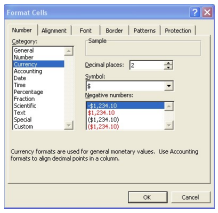


Button	Style	Effect
$	Currency	Displays and lines up dollar signs, comma separators and decimal points: 75.3 as $75.30. Excel uses the currency symbol(e.g. the $) selected in regional setting in the windows control panel.
%	Percent	Displays number as a percentage: 45 as 45%
,	Comma	Same as Currency, but without dollar signs: 12345.6 as 12,345.60
+.0 .00	Increase Decimal	Displays one more place after the decimal: .45 as .450
.00 +.0	Decrease Decimal	Displays one less place after the decimal: .450 as .45. If decreasing the number of digits eliminates a nonzero digit, the displayed number will be rounded. For example, if you format 9.75 with no digits following the decimal, Excel will display 10.

Change Number Format

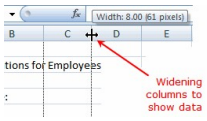
One of the tabs in the format dialog box is new. It is the FORMAT NUMBER tab.

Remember to select the cells, columns, rows or entire spreadsheet before you choose the format for you numbers or dates.



Widening Column

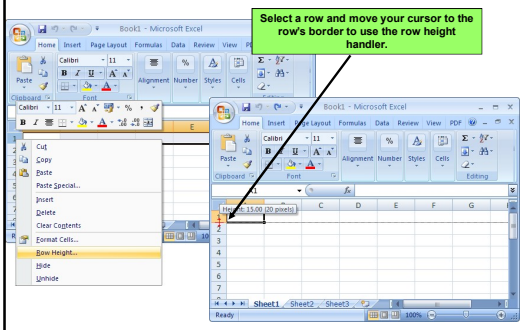
If the entered text exceeds the column width it will overlap the boundary into the next column when that column is blank. If the next column already contains data, text that does not fit in the cell is hidden.



To increase column width, drag the right side of the column header with the double-headed pointer.

To make the column width fit the contents of its widest cell, double-click the boundary on the right side of the column

Changing Row Height



Insert Column or Row

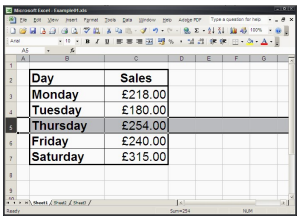
To insert a single column, click any cell in the column immediately to the ***right*** of where you want the new column to go. Then, on the **Home** tab, in the **Cells** group, click the arrow on **Insert**. On the drop-down menu, click **Insert Sheet Columns**. A new blank column is inserted.

To insert a single row, click any cell in the row immediately ***below*** where you want the new row to go. For example, to insert a new row between row 4 and row 5, click a cell in row 5. Then in the **Cells** group, click the arrow on **Insert**. On the drop-down menu, click **Insert Sheet Rows**. A new blank row is inserted.

Insert a New Row

1. Select a row by clicking on the number heading.

2. Right click your mouse and choose Insert.

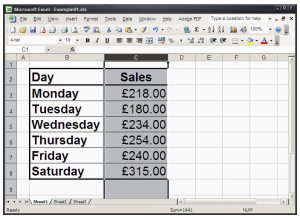


Day	Sales
Monday	£218.00
Tuesday	£180.00
Thursday	£254.00
Friday	£240.00
Saturday	£315.00

Adding a New Column

1. Select a column by clicking on the letter heading.

2. Right click your mouse and choose Insert.

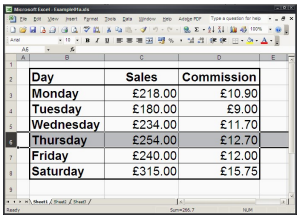


Day	Sales
Monday	£218.00
Tuesday	£180.00
Wednesday	£234.00
Thursday	£254.00
Friday	£240.00
Saturday	£315.00

Deleting a Row or Column

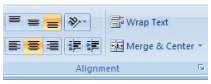
1. Select the row or column that you want to delete by clicking on the heading.

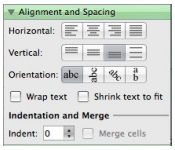
2. Right click your mouse and choose Delete.



Day	Sales	Commission
Monday	£218.00	£10.90
Tuesday	£180.00	£9.00
Wednesday	£234.00	£11.70
Thursday	£254.00	£12.70
Friday	£240.00	£12.00
Saturday	£315.00	£15.75

Alignments

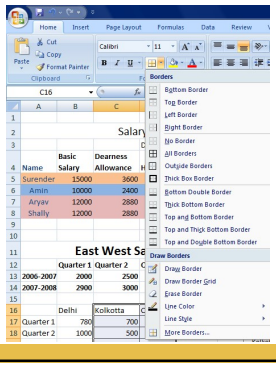




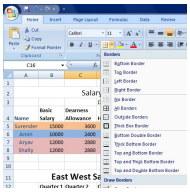
Alignment refers to the position of cell contents within a cell. In most cases, the user can apply any of the alignment options to cells that contain text, values, or the results of formulas. The alignment options are on the *Alignment* tab of the **Format Cells** dialogbox, and some of the options are also represented by buttons on the Alignment ribbon of Home tab.

Borders

To distinguish between different types of information in a worksheet, you can apply borders to cells, shade cells with a background color, or shade cells with a color pattern.



Borders



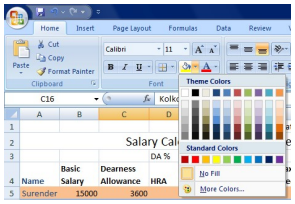
Line: Select an option under Style to specify the line size and style for a border. If user want to change a line style on a border that already exists, select the line style option that user want, and then click the area of the border in the Border model where user want the new line style to appear.

Presets: Select a predefined border option to apply borders to or remove borders from selected cells.

Color: Select a color from the list to change the color of the selected cells.

Border: Click a line style in the Style box, and then click the buttons under Presets or Border to apply borders to the selected cells. To remove all borders, click the None button. User can also click areas in the text box to add or remove borders.

Fills and Patterns



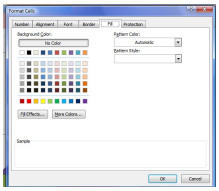
Background Color: Select a background color for selected cells by using the color palette.
Fill Effects: Select this button to apply gradient, texture, and picture fills to selected cells.
More Colors: Select this button to add colors that are not available on the color palette.
Pattern Color: Select a foreground color in the Pattern Color box to create a pattern that uses two colors.
Pattern Style: Select a pattern in the Pattern Style box to format selected cells in a pattern that uses the colors that user select in the Background Color and Pattern Color boxes.

Fill Colors

Select the cells that user want to apply shading to or remove shading from.

On the Home tab, in the Font group, do one of the following:

To fill cells with a solid color, click the arrow next to Fill Color in the Font group on the Home tab, and then click the color on the palette that user want.



To apply the most recently selected color, click Fill Color .

Format Style

On the worksheet, select a range of cells that user want to quickly format as a table.

On the **Home** tab, in the **Styles** group, click **Format as Table**.

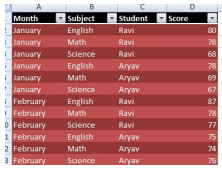


Table Style

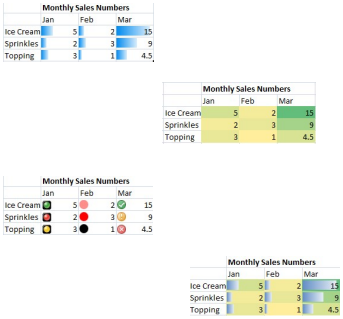
•On the worksheet, select the table to which user want to apply a table style.

•On the **Design** tab, in the **Table Styles** group, do one of the following:

1. Click the table style that user want to use.
2. Click the **More** button

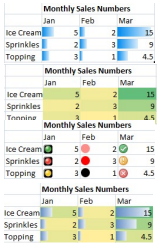
Conditional Style

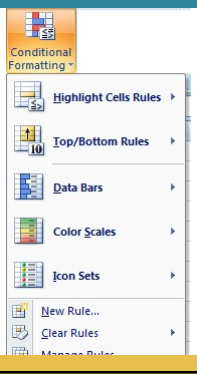
Use a conditional format to help you visually explore and analyze data, detect critical issues, and identify patterns and trends.



Conditional Formatting

- Conditional formatting of cells allows for better representation of data.



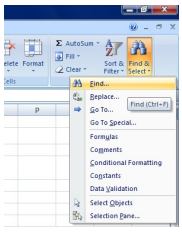


Copy and Paste

When you move or copy rows and columns, Microsoft Office Excel moves or copies all of the data that they contain, including formulas and their resulting values, comments, cell formats, and hidden cells

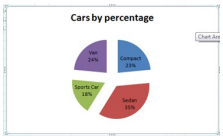
Find and Replace

Enter the information that you want to search for. You can use a question mark (?) to match any single character or an asterisk (*) to match any string of characters.



Chart

- Charts are graphical representation of numeric data.
- Excel supports numerous chart types.
- Use different chart types to portray different kinds of information.

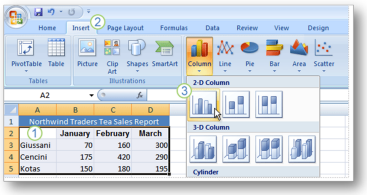


Create a basic Chart

1. Select the data that you want to chart, including the column titles (January, February, March) and the row labels (the salesperson names).

2.Then click the **Insert** tab, and in the **Charts** group, click the **Column** button.

You could select another chart type, but column charts are commonly used to compare items and will get your point across.



Create a basic Chart

3. After you click **Column**, you'll see a number of column chart types to choose from. Click **Clustered Column**, the first column chart in the **2-D Column** list.

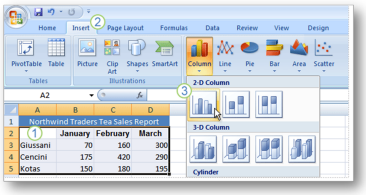


Chart Types: Column Chart

Data that is arranged in columns or rows on a worksheet can be plotted in a column chart.

Column charts are useful for showing data changes over a period of time or **for illustrating comparisons among items.**

In column charts, categories are typically organized along the horizontal axis and values along the vertical axis.

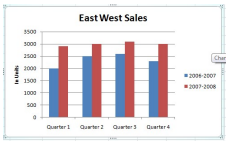


Chart Types: Line Chart

Data that is arranged in columns or rows on a worksheet can be plotted in a line chart.

Line charts can display continuous data over time, set against a common scale, and are therefore ideal for showing trends in data at equal intervals.

In a line chart, category data is distributed evenly along the horizontal axis, and all value data is distributed evenly along

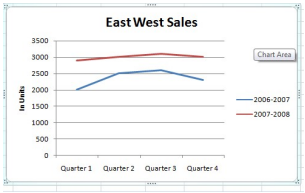


Chart Types: Pie Chart

Data that is arranged in one column or row only on a worksheet can be plotted in a pie chart.

Pie charts show the size of items in one data series

Pie chart are displayed as a percentage of the whole pie.

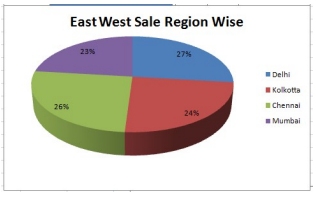


Chart Types: Bar Chart

Data that is arranged in columns or rows on a worksheet can be plotted in a bar chart.

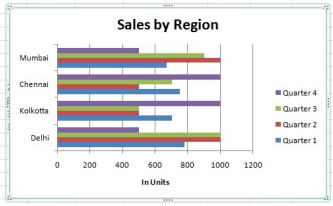


Chart Types: Doughnut Chart

Data that is arranged in columns or rows only on a worksheet can be plotted in a doughnut chart. Like a pie chart, **a doughnut chart shows the relationship of parts to a whole, but it can contain more than one data series**

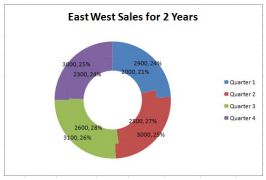
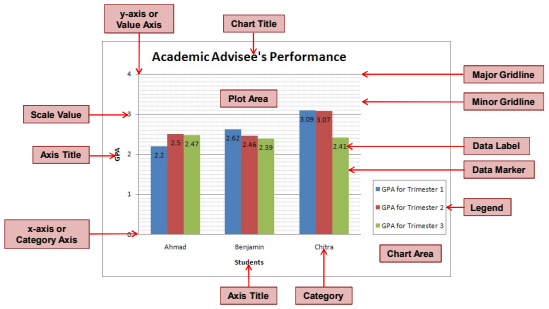


Chart Items



Query Session

Keep Practicing Excel