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Lecture: (6)

Spread Sheet: Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet

Subject: Computer Skill I

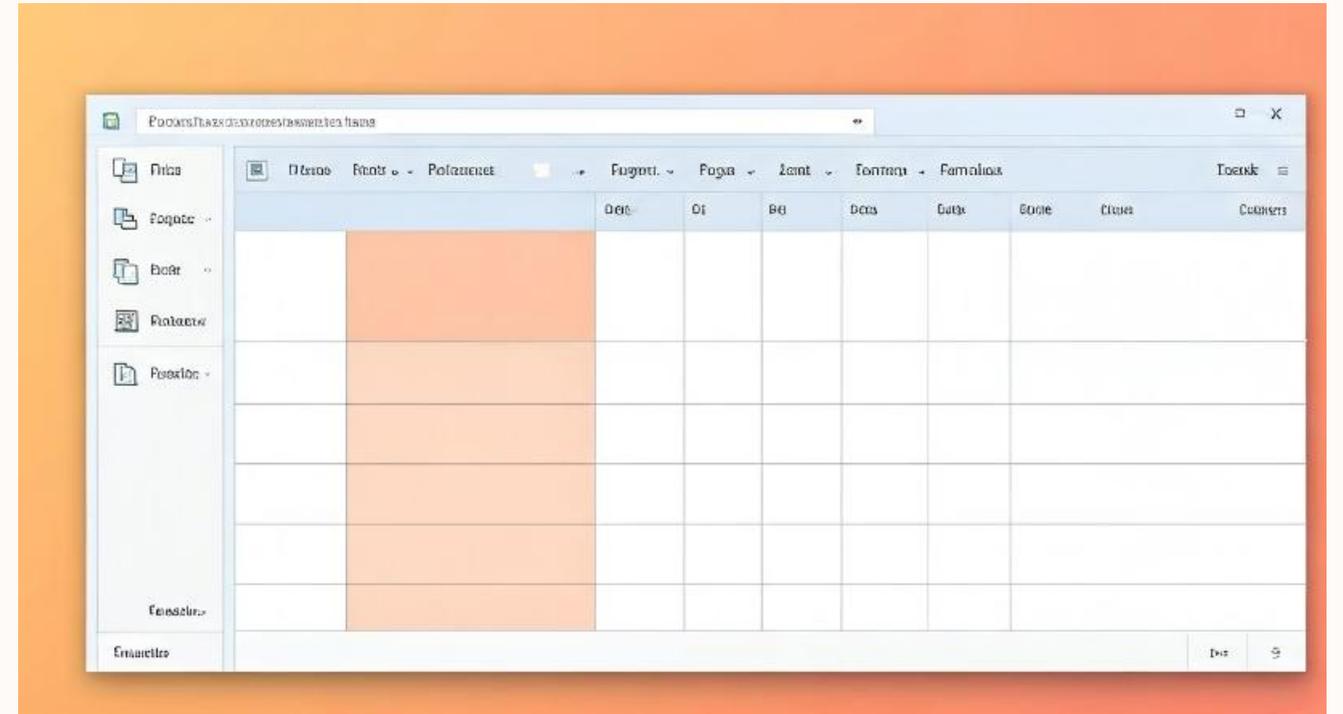
Level: First

Lecturer: Dr. Maytham N. Meqdad

Navigating the Excel Interface

Excel's interface consists of several key elements that help you navigate and access features. The Ribbon at the top contains tabs (Home, Insert, Page Layout, etc.) that organize commands into logical groups. Each tab reveals different command buttons and options when selected.

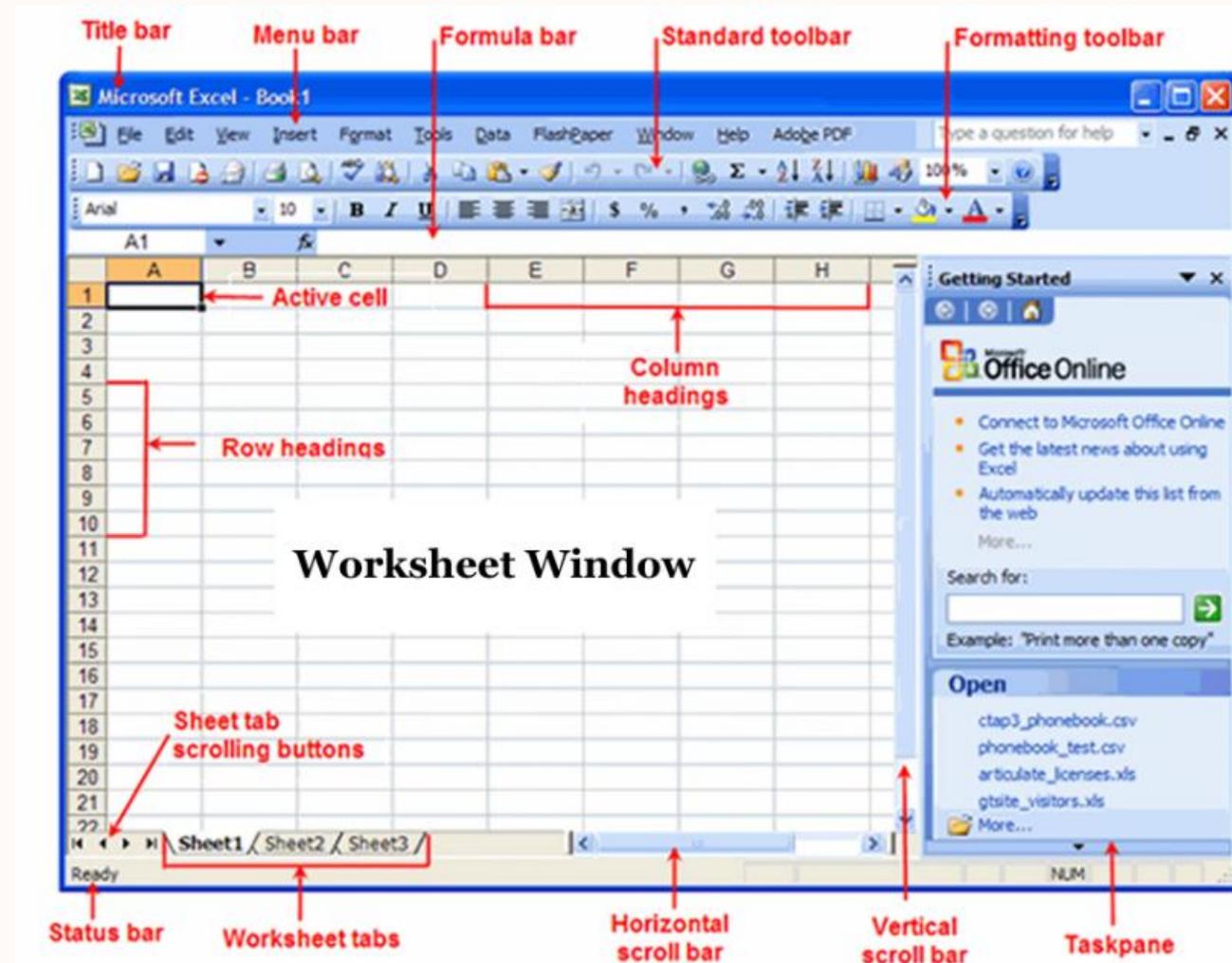
The Quick Access Toolbar provides one-click access to frequently used commands like Save, Undo, and Redo. You can customize this toolbar with your preferred commands.



At the bottom of the window, Worksheet tabs allow you to navigate between different sheets in your workbook. Use the horizontal and vertical scroll bars to move through larger spreadsheets that extend beyond your screen.

Structure of a Spreadsheet

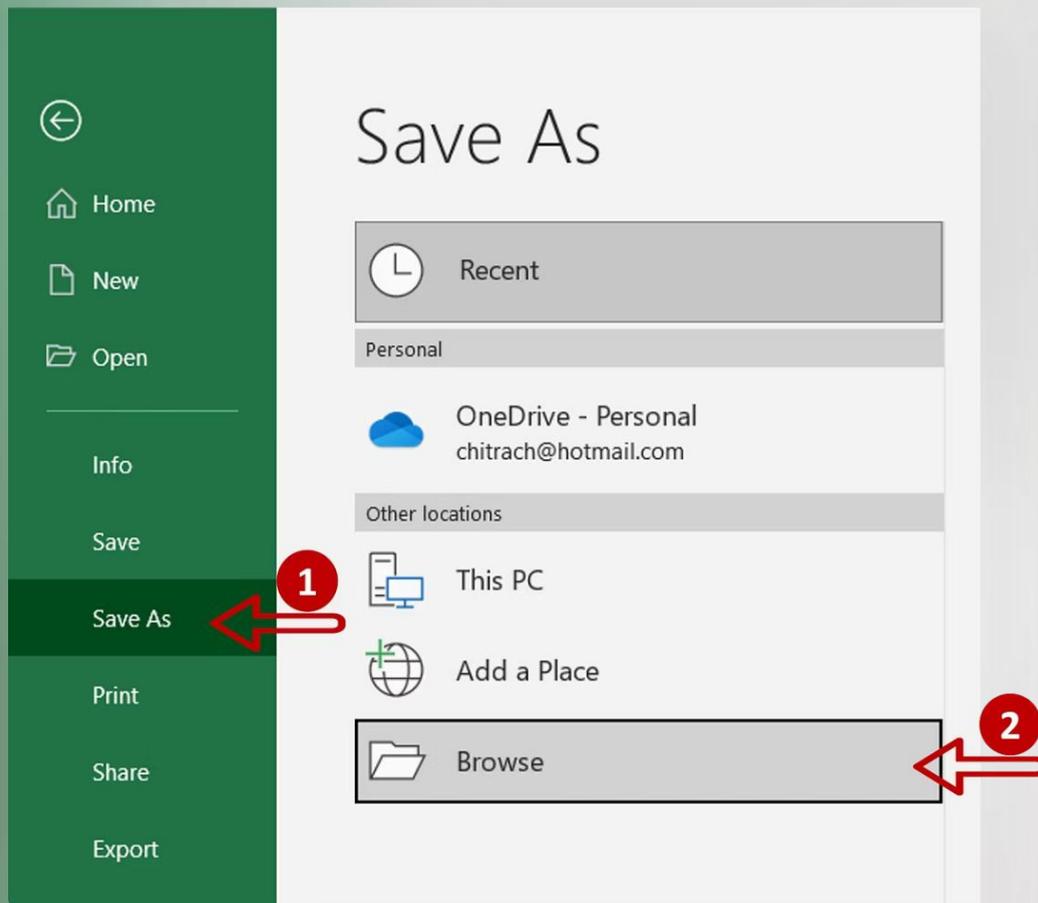
An Excel spreadsheet is organized into a grid of rows and columns. Rows are identified by numbers (1, 2, 3...) running down the left side, while columns are labeled with letters (A, B, C...) across the top. The intersection of a row and column creates a cell, which has a unique address like A1 or B16.



For easier data management, you can create named ranges by selecting cells and assigning descriptive names. This allows you to reference groups of cells by meaningful names rather than cell coordinates, making formulas more intuitive and easier to manage.

User Interface of Spreadsheet Program

Creating and Saving a Spreadsheet



Start a New Workbook

Open Excel and select "Blank workbook" from the start screen, or use Ctrl+N as a shortcut. A new workbook contains multiple worksheets for organizing different sets of related data.

Enter Your Data

Begin populating your spreadsheet with information. Click on any cell to make it active, then type your data.

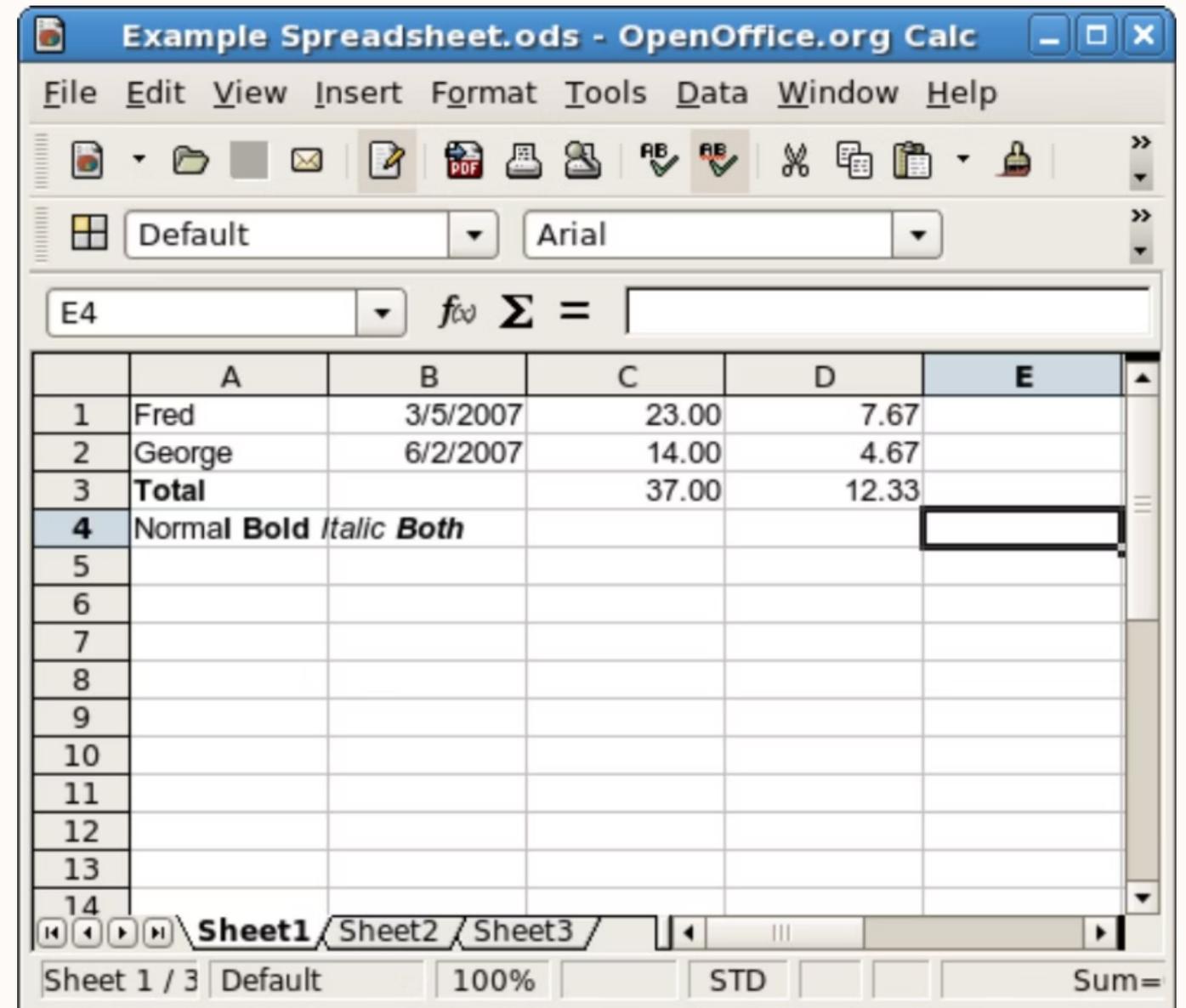
Save Your Work

Use Ctrl+S or click the Save icon. Choose a location, name your file, and select a format (.xlsx for standard Excel files, .csv for simple data exchange with other programs).

Data Entry Basics

Entering data in Excel is straightforward. Simply click on a cell and type. For text and labels, just enter the characters. For numbers, type the digits (without currency symbols for basic entry). For dates, use a consistent format like MM/DD/YYYY or DD-MM-YYYY.

After typing, press Enter to move down one cell, Tab to move right, or use arrow keys to navigate in any direction.



The AutoFill feature saves time when entering sequential or repetitive data. Enter the first few values, select those cells, and drag the small square handle in the bottom-right corner. Excel detects patterns and completes the series



Selecting and Highlighting Cells



Single Cell Selection

Simply click on the cell you want to select. The active cell appears with a bold outline.



Multiple Adjacent Cells

Click and drag to select a range of cells. Alternatively, click the first cell, hold Shift, and click the last cell in your desired range.



Keyboard Shortcuts

Use Shift+Arrow keys to extend selection, Ctrl+Space to select an entire column, and Shift+Space for an entire row.



Non-Adjacent Selection

Select the first range, hold Ctrl, then select additional ranges to work with multiple areas simultaneously.

Manipulating Rows and Columns

Inserting Rows and Columns

Right-click on a row number or column letter and select "Insert" to add a new row above or column to the left of your selection. Alternatively, use the Insert button in the Cells group on the Home tab.

To resize rows or columns, hover your cursor over the boundary between row numbers or column letters until it changes to a double arrow, then click and drag. Double-clicking this boundary automatically fits the width or height to the content.

Deleting Rows and Columns

Right-click and select "Delete" to remove entire rows or columns. Be careful, as this action can't be undone with a simple Ctrl+Z if you've performed other actions afterward.

Formatting Cells

Text Formatting

Modify font style, size, color, and effects (bold, italic, underline) using the Font group on the Home tab. Adjust alignment (horizontal and vertical) and text orientation with the Alignment group tools.

Number Formatting

Apply number formats using the Number group: currency (\$10.00), percentage (15%), date (3/15/2023), scientific notation, fractions, and custom formats for specialized needs.

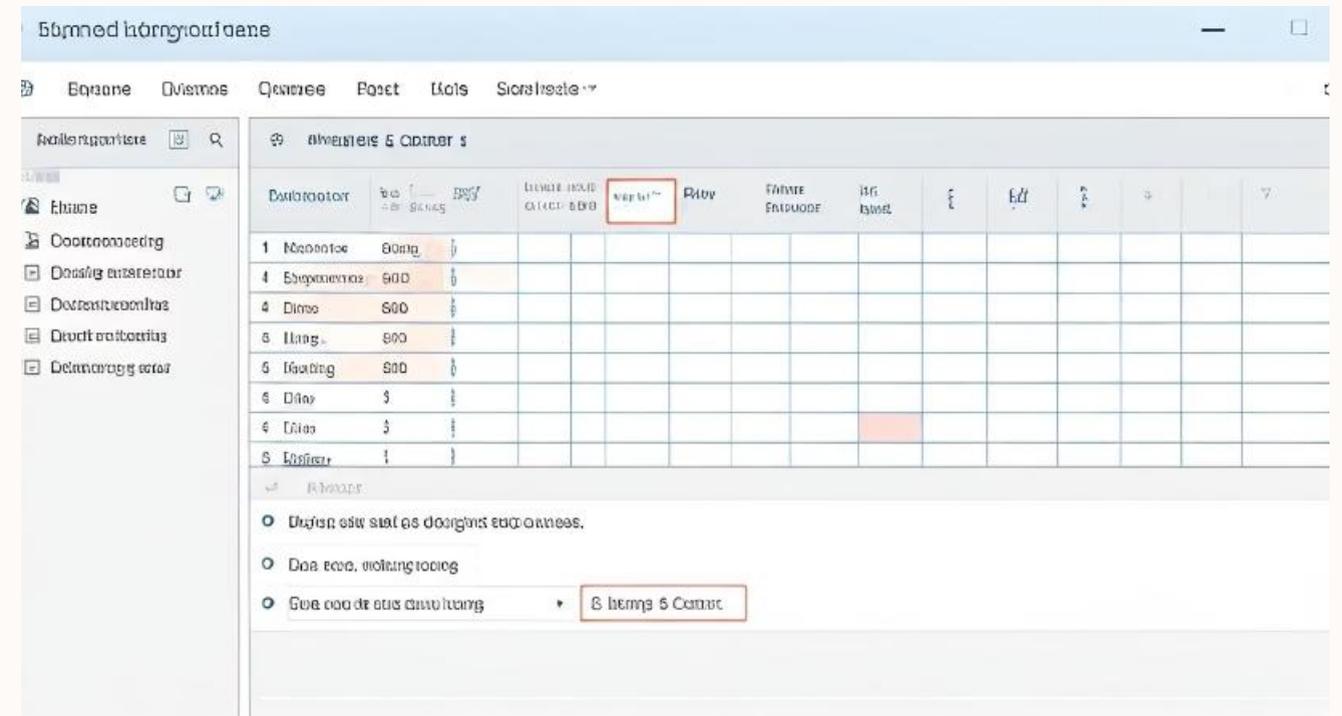
Cell Styles

Use pre-designed cell styles from the Styles gallery for consistent professional formatting. Create custom styles for your organization's standard formats.

Cell Merging and Splitting

Merging cells combines multiple cells into a single larger cell, ideal for creating headers that span multiple columns. Select the cells you want to merge, then click the Merge & Center button in the Alignment group on the Home tab.

When merging cells containing data, only the content from the upper-left cell is preserved. Excel warns you about this data loss when attempting to merge cells with multiple values.



To unmerge previously merged cells, select the merged cell and click the Merge & Center button again to toggle the merge off. This splits the cell back into its original component cells, with the content remaining in the upper-left cell.

Copying, Cutting, and Pasting Data



Copy Data

Select cells and press Ctrl+C, or right-click and select "Copy." A moving dashed border appears around copied cells.



Cut Data

Use Ctrl+X or right-click and select "Cut" to move data rather than duplicate it.



Basic Paste

Select the destination cell and press Ctrl+V or right-click and select "Paste" to insert the data with original formatting.



Paste Special

Access advanced options via right-click > "Paste Special" or Alt+E+S. Choose to paste values only, formulas, formatting, or transpose data.

Using Formulas: The Basics

Excel formulas always begin with an equal sign (=) which signals to Excel that what follows is a calculation rather than text. After the equal sign, you can include cell references, numbers, mathematical operators, functions, and other elements to create your calculation.



Basic Arithmetic

Use operators like + (addition), - (subtraction), * (multiplication), / (division), and ^ (exponentiation).

Example: =A1+B1 or =10*C5



Simple Functions

Functions streamline complex calculations. The SUM function adds values:
=SUM(A1:A10) adds all values in that range.



Combining Operations

Excel follows mathematical order of operations. Use parentheses to control calculation sequence:
=(A1+B1)*C1

Cell Referencing: Relative, Absolute, Mixed

Relative References

Standard cell references (A1, B5) are relative. When copied, they adjust based on the new position. If =A1+B1 is in cell C1 and copied to C2, it becomes =A2+B2 automatically.

Absolute References

Dollar signs make references absolute (\$A\$1). These don't change when copied. If =\$A\$1*B1 is copied from C1 to C2, it remains =\$A\$1*B2 - useful for fixed values like tax rates.

Mixed References

You can lock just the row (\$A1) or just the column (A\$1). Mixed references are valuable for calculations that need to reference a specific row or column while allowing the other component to adjust.

Key Functions in Excel

SUM Function

=SUM(range) adds all numbers in a range. Example:

=SUM(B2:B10) adds values in cells B2 through B10. You can include multiple ranges:

=SUM(B2:B10,D2:D10)

AVERAGE, MIN, MAX

=AVERAGE(range) calculates the mean value. =MIN(range) and =MAX(range) find the smallest and largest values in a range respectively.

COUNT Functions

=COUNT(range) counts cells containing numbers.

=COUNTA(range) counts non-empty cells.

=COUNTIF(range,criteria) counts cells meeting specific conditions.

Access the Function Wizard by clicking the fx button next to the formula bar. This tool guides you through selecting functions and entering arguments with helpful descriptions of each parameter.

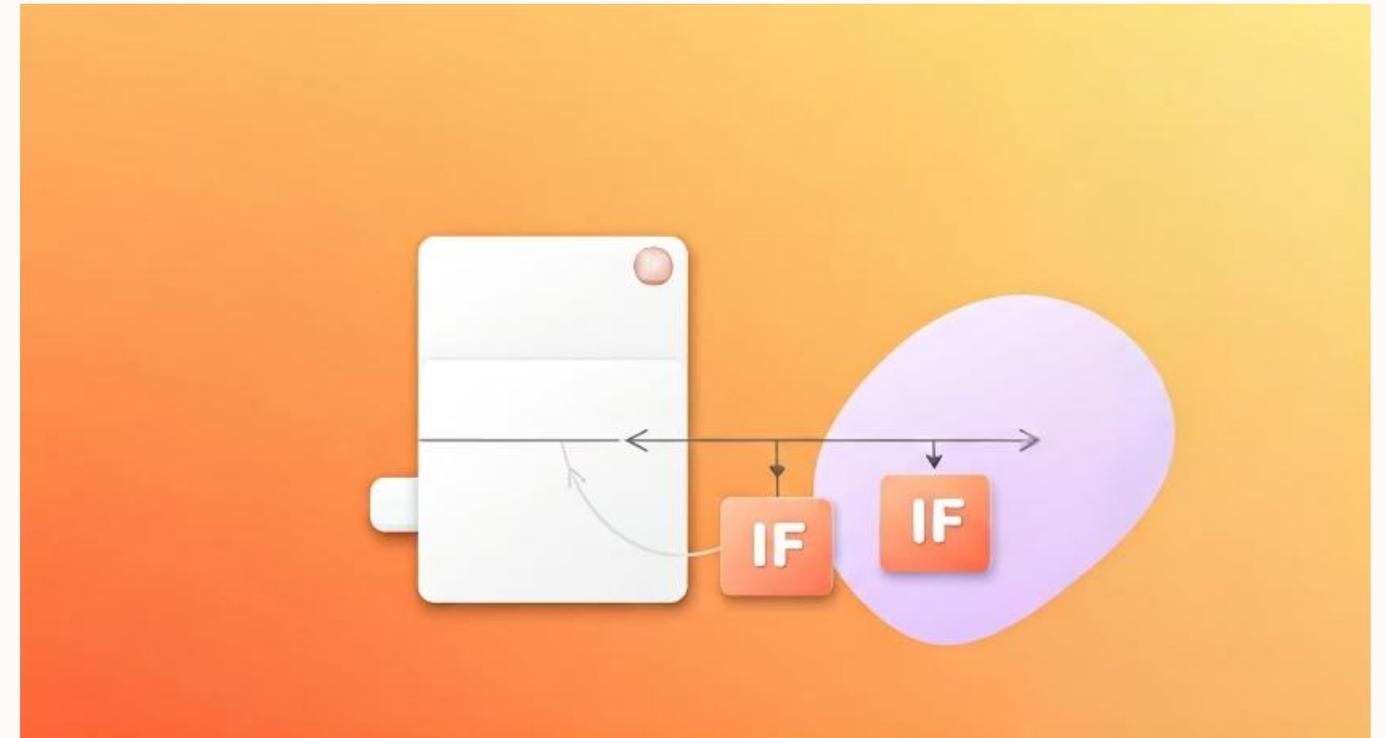
Logical and Conditional Functions

IF Function

The IF function performs a logical test and returns one value for TRUE and another for FALSE.

Basic syntax: =IF(logical_test, value_if_true, value_if_false)

Example: =IF(A1>10,"High","Low") returns "High" if A1 exceeds 10, otherwise "Low".

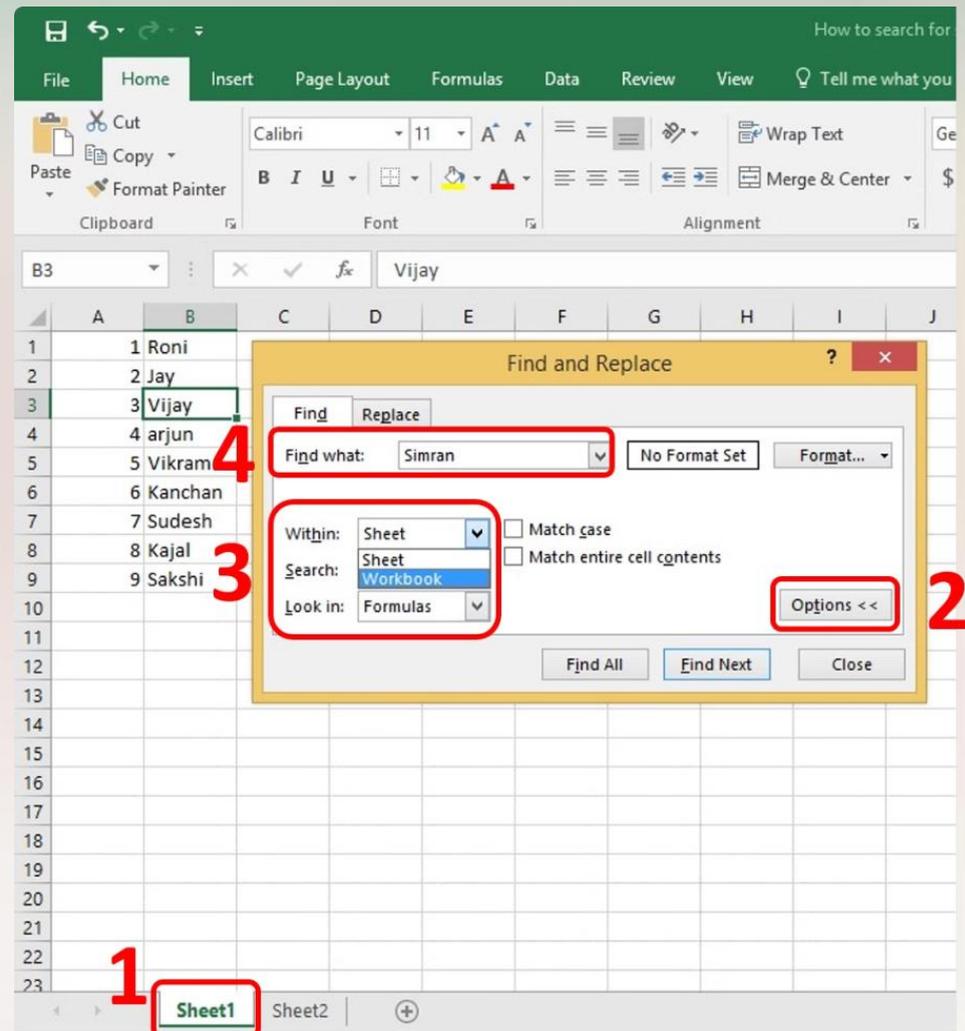


AND, OR, NOT Functions

These functions evaluate multiple conditions:

- =AND(condition1,condition2) returns TRUE if all conditions are true
- =OR(condition1,condition2) returns TRUE if any condition is true
- =NOT(condition) reverses TRUE/FALSE values

Editing and Correcting Data



Undo and Redo

Quickly reverse mistakes with Ctrl+Z (Undo) or restore undone actions with Ctrl+Y (Redo). Excel maintains multiple levels of undo history during your session.



Edit Cell Contents

Double-click a cell or select it and press F2 to edit its contents directly. Edit within the cell or in the formula bar above the worksheet.



Spell Check

Run Excel's spell checker with F7. It identifies potential spelling errors in text entries and offers suggestions for corrections.



Find and Replace

Use Ctrl+F to find specific content or Ctrl+H to find and replace content throughout your workbook. Supports options for matching case or entire cell contents.

Sorting and Filtering Data

Basic Sorting

Select any cell within your data range, then click the Sort buttons in the Data tab to arrange information alphabetically, numerically, or chronologically. For multi-level sorting, use the Sort dialog box to define primary, secondary, and tertiary sort keys.

Enable AutoFilter by selecting your data range and clicking the Filter button in the Data tab. Filter dropdowns appear in each column header, allowing you to show only rows matching specific criteria or values. Use custom filters for more complex conditions.

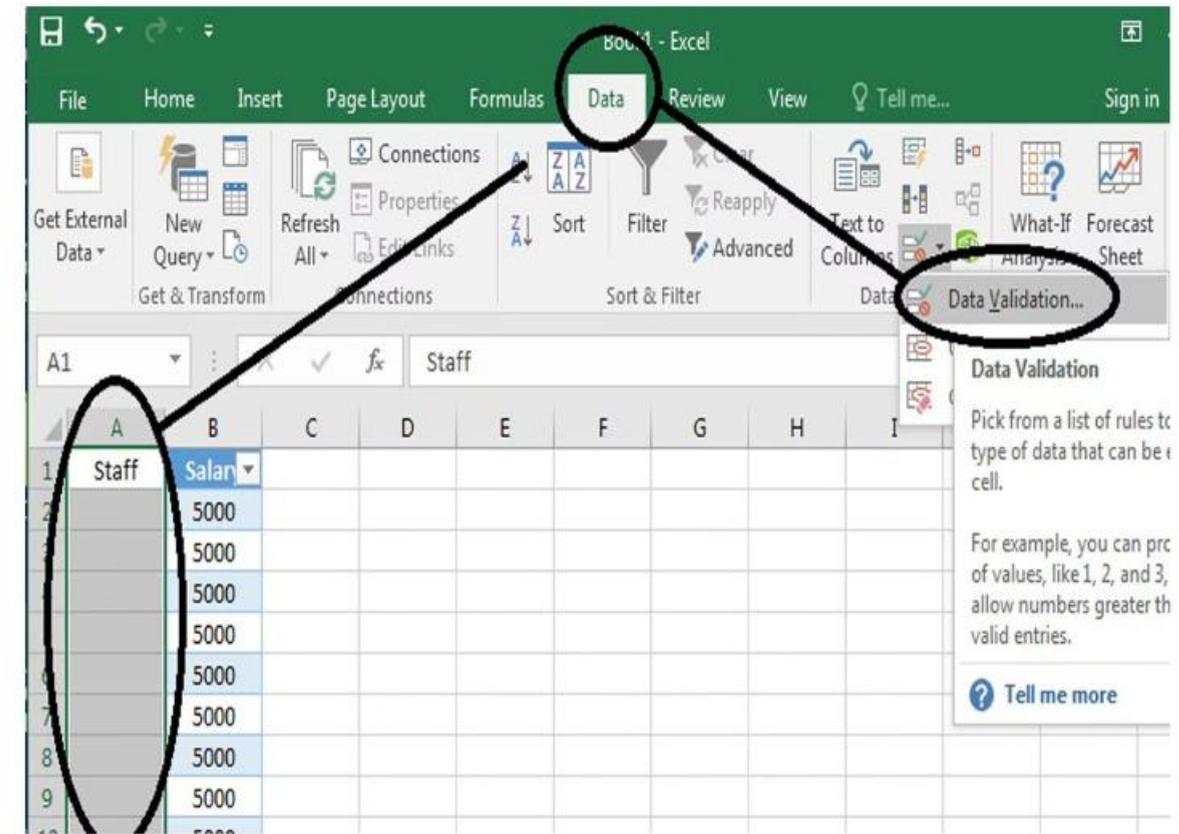
Custom Sorting

Create custom sort orders for non-standard sequences like days of the week or months. Sort by cell color, font color, or icons to organize visually formatted data. Specify sort orientation (left-to-right for row sorting instead of the default top-to-bottom).

Data Validation and Error Checking

Data validation prevents invalid entries by restricting what users can input into cells. Access this feature from the Data tab > Data Tools group > Data Validation. You can limit entries to specific values, ranges, lengths, or custom formulas.

Create dropdown lists to ensure consistent data entry: select the cell, open Data Validation, choose "List" as the validation criteria, and enter source values or cell references in the Source field.



Excel automatically flags common formula errors with indicators like #DIV/0! (division by zero), #VALUE! (invalid data type), #REF! (invalid cell reference), and #NAME? (unrecognized function name). Hover over these errors to see explanations and potential fixes.

Preparing the Spreadsheet for Printing

Set Page Layout

Access Page Layout tab to set orientation (portrait/landscape), paper size, and margins. Use scaling options to fit your spreadsheet to a specific number of pages or percentage of actual size.

Define Print Area

Select the range you want to print, then click Page Layout > Print Area > Set Print Area. Only this range will print, saving paper and focusing on relevant data.

Add Headers and Footers

Insert page numbers, dates, file names, or custom text in headers/footers via Insert tab > Header & Footer. Create different headers for first page or odd/even pages.

Set Print Titles

Repeat row/column labels on each printed page for easier reading of multi-page reports. Set these in Page Layout > Print Titles.

Printing Options and Output

Print Preview

Always check Print Preview (File > Print) before printing to avoid wasting paper. Examine page breaks and overall layout to ensure everything appears as expected.

Print Selection

Print only specific parts of your workbook by selecting the range first, then choosing "Print Selection" in the Print dialog. Useful for printing just the relevant portion of large workbooks.

Page Breaks

View and adjust automatic page breaks in Page Break Preview mode (View tab). Drag blue dashed lines to control exactly where pages split for optimal printed results.

Export Options

Save as PDF (File > Save As > PDF) for electronic distribution with consistent formatting. Adjust PDF quality settings based on whether the file is for screen viewing or professional printing.

Summary and Best Practices

Key Skills Recap

- Navigate Excel's interface confidently
- Enter and format data efficiently
- Build powerful formulas with proper references
- Organize data with sorting and filtering
- Create professional-looking printed outputs



Excel Best Practices

- Design spreadsheets with clear structure and labeling
- Use consistent formatting for easier reading
- Save frequently and keep backups
- Document complex formulas with cell comments
- Validate data to prevent errors at entry