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FREE EBOOK

COMPUTER AND OFFICE SKILLS

MS Excel Study Book

The complete study notes, practice questions and glossary for MS Excel

INSIDE THIS BOOK

- Getting Started with Excel
- Formatting Cells and Worksheets
- Formulas and Basic Functions
- Relative, Absolute and Mixed References
- Decisions and Lookups: IF, VLOOKUP and XLOOKUP
- ...and 2 more chapters, practice questions and a glossary

Beginner to intermediate

Students, shopkeepers and office staff who keep records and lists

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MS Excel Study Book

Work with cells, ranges and formulas in Microsoft Excel, use functions such as SUM, IF, VLOOKUP and XLOOKUP, and sort, filter, chart and print your data.

WHO IT IS FOR	Students, shopkeepers and office staff who keep records and lists
LEVEL	Beginner to intermediate
SUBJECT AREA	Computer and office skills
WHAT IS INSIDE	7 chapters, practice questions with answers, and a glossary

HOW TO USE IT

Read one chapter at a time and try the examples as you go: on a computer, at your workbench or in your notebook. The boxes give tips, safety points and short activities. When you finish, test yourself with the practice questions and check your answers at the end. Words you may not know are explained in the glossary.



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Getting Started with Excel

Microsoft Excel is a **spreadsheet** program. It stores data in a grid and calculates with it, which makes it ideal for marks lists, attendance registers, shop stock, household budgets and sales reports. These lessons follow Excel in Microsoft 365 and Excel 2016 or later on Windows.

Workbooks, worksheets and cells

- A **workbook** is an Excel file. It is saved with the extension **.xlsx**.
- A workbook contains one or more **worksheets** (sheets). Their tabs, such as Sheet1, appear at the bottom; click the + (New sheet) button to add one. In current versions a new workbook starts with one sheet.
- Each sheet is a grid of **columns**, labelled A, B, C and so on up to XFD, and **rows**, numbered 1, 2, 3 and so on up to 1,048,576.
- A **cell** is where a column and a row meet. Its name, called the **cell address** or **cell reference**, is the column letter followed by the row number, such as **B4**.
- A **range** is a group of cells. **A1:A10** means A1 to A10 in one column; **A1:C5** is a block of 3 columns and 5 rows, which is 15 cells. The colon means "to".

The Excel window

Part	Purpose
Ribbon	Tabs such as Home, Insert, Page Layout, Formulas, Data, Review and View
Name Box	Shows the address of the active cell, for example C3
Formula Bar	Shows and edits the content of the active cell
Active cell	The selected cell, shown with a thick border
Sheet tabs	Switch between worksheets

Entering data

Click a cell, type, and press **Enter** to move down or **Tab** to move right. By default Excel aligns **text to the left** and **numbers and dates to the right** of a cell, which is a quick way to notice a number that was accidentally stored as text.

- **F2** edits the active cell, and **Esc** cancels an entry you are still typing.
- **Alt+Enter** starts a new line inside the same cell.
- **Ctrl+;** enters today's date.
- If a cell shows #####, the column is too narrow for its number or date. Double-click the right border of the column heading to widen it automatically.

Moving around

The arrow keys move one cell at a time. **Ctrl+Arrow key** jumps to the edge of the data. **Ctrl+Home** goes to cell A1 and **Ctrl+End** goes to the last used cell. **Ctrl+Page Down** and **Ctrl+Page Up** move to the next and previous sheet.

AutoFill

The small square at the bottom-right corner of the active cell is the **fill handle**. Type Jan in a cell and drag the fill handle down: Excel fills Feb, Mar, Apr and so on. It works for days such as Mon and Tue, and for dates. For numbers, type 1 and 2 in two cells, select both, and drag to continue the series 3, 4, 5. Dragging a single number simply copies it.

Excel 2013 and later also have **Flash Fill (Ctrl+E)**. Type one example, such as the first name taken from a full name, and Excel fills the rest of the column by following the pattern.

KEY POINTS

- A workbook (.xlsx) contains worksheets made of columns, rows and cells.
- A cell address is the column letter followed by the row number, such as B4.
- A range such as A1:C5 uses a colon to mean "from A1 to C5".
- Text aligns left and numbers align right by default; ##### means the column is too narrow.
- The fill handle continues series such as Jan, Feb, Mar.

TRY THESE EXERCISES

1. Create a workbook with the headings Roll No, Name and Class in A1:C1, enter details for eight students, click a few cells to read their addresses in the Name Box, and save the file as Class Register.
2. On a new sheet, use the fill handle to fill Jan to Dec down column A starting at A2 and Mon to Sun across row 1 starting at B1, then type 1 and 2 in two cells, select both and drag to continue the series up to 20.
3. Type ten full names in column A and the first name of the first person in column B, press Enter so the cell below is selected and press Ctrl+E to let Flash Fill complete the column, then enter today's date with Ctrl+; and fix any ##### by double-clicking the column border.

CHAPTER 2

Formatting Cells and Worksheets

Formatting changes how data **looks**, not the value stored in the cell. If a cell holds 1500 and you format it as currency, it may show ! 1,500.00, but formulas still use the number 1500.

Number formats

Use the **Number Format** list in the **Number** group of the **Home** tab, or press **Ctrl+1** to open the **Format Cells** dialog box.

Format	Example	Notes
General	1500	The default; Excel decides how to show the value
Number	1500.00	Choose the number of decimal places
Currency	! 1,500.00	In Format Cells, pick the ! symbol from the Symbol list
Percentage	0.25 shows as 25%	The stored value is still 0.25
Date	15-08-2025	Excel stores a date as a number, so dates can be sorted and subtracted
Text	00123	Keeps leading zeros, as in some ID codes

The Number group also has buttons for **Accounting Number Format**, **Percent Style**, **Comma Style**, and **Increase Decimal** and **Decrease Decimal**.

Font, alignment and borders

- The **Font** group sets the font, size, bold, **Fill Color** (the cell background) and **Font Color**.
- **Borders** draws lines around cells. The gridlines you see on screen do not print by default, so add borders to any table you plan to print.
- The **Alignment** group has left, center and right alignment, **Wrap Text**, which shows long text on several lines inside the cell, and **Merge & Center**, which joins cells and centres the content, often used for a title across a table.
- **Orientation** rotates text, which helps with headings over narrow columns.

Column width and row height

Drag the border between two column headings to change the width, or double-click it to **AutoFit** the column to its widest entry. **Home > Format** also offers **Column Width**, **Row Height**, and **Hide & Unhide**.

Conditional Formatting

Home > Conditional Formatting formats cells automatically based on their values. In a stock sheet, for example, **Highlight Cells Rules > Less Than** can colour every quantity below 10 in red. **Data Bars** and **Color Scales** show values visually. The formatting updates by itself whenever the numbers change.

Format Painter and styles

Format Painter copies the format of one cell to other cells. **Cell Styles** and **Format as Table** apply a complete, matching look in one click.

Before typing ID codes that begin with 0, format the column as Text. Otherwise Excel treats them as numbers and drops the leading zeros.

KEY POINTS

- Formatting changes how a value looks, not the value itself.
- Ctrl+1 opens Format Cells, where you can choose formats such as Currency with the ! symbol.
- Gridlines do not print by default; use Borders for tables you will print.
- Wrap Text, Merge & Center and AutoFit help data fit neatly.
- Conditional Formatting changes a cell's look automatically based on its value.

TRY THESE EXERCISES

1. Before typing anything in a Code column, format it as Text so codes such as 00123 keep their zeros, then type a price list of ten items with their codes, format the price column as Currency with the ! symbol and two decimal places from Format Cells (Ctrl+1), and add All Borders to the table.
2. Add a title above a marks table and use Merge & Center across the table's width, AutoFit every column by double-clicking the border between the column headings, then apply Wrap Text to a long column heading and drag that column narrower so the heading shows on two lines.
3. In a stock sheet of 15 items, use Conditional Formatting > Highlight Cells Rules > Less Than to colour quantities below 10 in red, add Data Bars to a sales column, then change one quantity to 5 and watch its colour update.

CHAPTER 3

Formulas and Basic Functions

Writing a formula

Every formula starts with an **equals sign (=)**. Instead of typing the numbers themselves, refer to the cells that hold them, so the answer updates automatically when the data changes.

Operator	Meaning	Example
+	Add	=B2+C2
-	Subtract	=B2-C2
*	Multiply	=B2*C2

Operator	Meaning	Example
/	Divide	=B2/C2
^	Power	=B2^2
&	Join text	=A2&" "&B2

Excel follows the usual order of operations: brackets first, then powers, then multiplication and division, then addition and subtraction.

```
=10+5*2    gives 20
=(10+5)*2  gives 30
```

Press **Enter** to see the result. The cell shows the answer and the Formula Bar shows the formula. **Formulas > Show Formulas** displays every formula on the sheet at once.

Functions

A **function** is a ready-made formula. It has a name followed by **arguments** in brackets, separated by commas, as in `=SUM(B2:B10)`.

Function	What it returns	Example
SUM	The total of the numbers	=SUM(B2:B10)
AVERAGE	The arithmetic mean	=AVERAGE(B2:B10)
MIN	The smallest number	=MIN(B2:B10)
MAX	The largest number	=MAX(B2:B10)
COUNT	How many cells contain numbers	=COUNT(B2:B10)
COUNTA	How many cells are not empty	=COUNTA(A2:A10)

The difference between COUNT and COUNTA matters. If A2:A6 holds the names Aman, Neha, Ravi, Sara and Tina, `=COUNT(A2:A6)` gives 0 because there are no numbers, while `=COUNTA(A2:A6)` gives 5.

AVERAGE ignores empty cells and text, but 0 is a number and is included. If B2:B5 holds 10, 20, 30 and one empty cell, `=AVERAGE(B2:B5)` gives 20. Type 0 in the empty cell and the answer becomes 15.

A function can take several ranges or numbers, such as `=SUM(B2:B10,D2:D10)` or `=MAX(B2:B10,100)`.

AutoSum

Click the cell just below a column of numbers and press **Alt+=** (or click **AutoSum** on the Home or Formulas tab). Excel writes a SUM formula and guesses the range; press Enter to accept it. The arrow beside AutoSum also offers Average, Count Numbers, Max and Min. When you select some cells, the **status bar** at the bottom shows their Average, Count and Sum without any formula.

Common errors

Error	Usual cause
#DIV/0!	Dividing by zero or by an empty cell
#NAME?	A misspelled function name, such as =SUMM(B2:B5)
#VALUE!	The wrong type of data, such as text used in arithmetic
#REF!	A cell the formula referred to has been deleted
#N/A	A lookup function did not find the value

Click a formula cell and press F2. Excel colours each range the formula uses, so you can check it visually.

KEY POINTS

- Every formula starts with =; use cell references so results update automatically.
- Excel calculates brackets first, then powers, then * and /, then + and -.
- COUNT counts cells with numbers, while COUNTA counts cells that are not empty.
- AVERAGE ignores empty cells but includes zeros.
- Alt+= inserts AutoSum; errors such as #DIV/0!, #NAME? and #REF! point to the cause of a problem.

TRY THESE EXERCISES

1. Create a marksheet for five students with marks in five subjects, add Total and Average columns using SUM and AVERAGE, and show the highest and lowest totals with MAX and MIN.
2. Make a shopping bill with Item, Qty and Rate columns, calculate each Amount with a formula such as $=B2*C2$, copy it down with the fill handle, and get the grand total with AutoSum (Alt+=).
3. Type $=10+5*2$ and $=(10+5)*2$ in two cells to see how brackets change the answer, compare COUNT and COUNTA on a column of names, and type $=SUMM(B2:B5)$ to see the #NAME? error.

CHAPTER 4

Relative, Absolute and Mixed References

Relative references

When you copy a formula, Excel adjusts its cell references. Suppose D2 multiplies the quantity in B2 by the rate in C2. Drag the fill handle from D2 down to D5 and look at the copies:

D2	$=B2*C2$
D3	$=B3*C3$
D4	$=B4*C4$
D5	$=B5*C5$

Each formula moved down one row, so its references moved down one row too. These are **relative references**, and they are the default.

Copying a formula one column to the right changes the column letters in the same way, so the formula in D2 copied to E2 becomes $=C2*D2$.

The problem: one fixed cell

Ritu runs a shop. She keeps a discount rate in cell **F1** (10% in this example) and her bill amounts in B2:B6. She types a formula in C2 and copies it down:

C2	$=B2*F1$	correct
C3	$=B3*F2$	wrong: F2 is empty, so the answer is 0

The reference to the rate should not have moved.

Absolute references

Put a dollar sign before the column letter and before the row number to lock a reference: **\$F\$1**. Now the copies look like this:

```
C2    =B2*$F$1
C3    =B3*$F$1
C4    =B4*$F$1
```

The bill reference moves; the rate stays fixed.

Reference	Type	When copied
A1	Relative	Column and row both change
\$A\$1	Absolute	Nothing changes
A\$1	Mixed	Column changes, row stays 1
\$A1	Mixed	Column stays A, row changes

The dollar sign has nothing to do with money; it simply means "do not change this part".

The F4 shortcut

While typing or editing a formula, place the cursor in a reference and press **F4**. Each press cycles through the four types: A1, \$A\$1, A\$1, \$A1, and back to A1.

Mixed references in practice

Mixed references help when one formula is copied both down and across, as in a multiplication table. If B1:J1 holds the numbers 1 to 9 and A2:A10 also holds 1 to 9, type **=\$A2*B\$1** in B2 and copy it to the whole block B2:J10. Column A stays locked for the numbers on the left, and row 1 stays locked for the numbers along the top.

References to other sheets

A formula can use a cell on another sheet: **=Sales!B5** means cell B5 on the sheet named Sales. If the sheet name contains spaces, Excel wraps it in single quotes, as in **= 'April Sales' !B5**.

Named cells

You can give a cell a name. Select F1, type Discount in the **Name Box** and press Enter. Now the formula `=B2*Discount` gives the same result as one using `=B2*$F$1`, and it is easier to read. A name created this way refers to a fixed cell, just like an absolute reference.

Before copying a formula, ask which parts should move and which should stay. Lock only the parts that must stay.

KEY POINTS

- Relative references (A1) change when a formula is copied; this is the default.
- Absolute references (\$A\$1) stay fixed wherever the formula is copied.
- Mixed references (\$A1 or A\$1) lock only the column or only the row.
- F4 cycles through the reference types while you edit a formula.
- Use an absolute reference or a named cell for one value, such as a rate, used by many formulas.

TRY THESE EXERCISES

1. Type five bill amounts in B2:B6 and a discount rate of 10% in F1, enter `=B2*$F$1` in C2 and copy it down to C6, then try `=B2*F1` copied down instead and work out why the lower rows show 0.
2. Build a multiplication table: type 1 to 9 in B1:J1 and in A2:A10, enter `=A2*B$1` in B2, and copy it to the whole block B2:J10.
3. Give cell F1 the name Discount in the Name Box and rewrite the discount formula as `=B2*Discount`, then edit a formula such as `=B2*$F$1`, place the cursor in the B2 reference and press F4 four times, writing down each form it shows.

CHAPTER 5

Decisions and Lookups: IF, VLOOKUP and XLOOKUP

The IF function

IF checks a condition and returns one value when it is true and another when it is false.

```
=IF(logical_test, value_if_true, value_if_false)
```

The test uses comparison operators: = (equal to), <> (not equal to), >, <, >= and <=.

- `=IF(B2>=50000,"Target met","Below target")` checks a salesperson's monthly sales in B2.
- `=IF(C2<10,"Reorder","OK")` flags shop items that are running low.
- `=IF(B2>=5000,B2*5%,0)` gives a 5% discount only on bills of ! 5,000 or more.

Text results go inside double quotes; numbers and cell references do not.

You can put one IF inside another, called a **nested IF**, to choose between more than two results:

```
=IF(B2>=100000,"Gold",IF(B2>=50000,"Silver","Bronze"))
```

Excel checks the tests in order and stops at the first one that is true. Microsoft 365 and Excel 2019 and later also have **IFS**, which lists several tests without nesting.

Two related functions work only on matching cells: `=COUNTIF(C2:C20,"Delhi")` counts the cells equal to Delhi, and `=SUMIF(C2:C20,"Delhi",D2:D20)` adds the D values in those rows.

VLOOKUP

VLOOKUP looks for a value in the **first column** of a table and returns a value from a column to its right, in the same row.

```
=VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])
```

Suppose A2:C50 is a price list with the item code in column A, the item name in B and the price in C. To find the price of the code typed in F2:

```
=VLOOKUP(F2,$A$2:$C$50,3,FALSE)
```

- **3** means the third column of the table, the price.
- **FALSE** asks for an **exact match**. If you leave it out, VLOOKUP does an approximate match, which needs the first column sorted in ascending order and can return the wrong row. For codes, IDs and names, always use FALSE.
- If the value is not found, VLOOKUP returns **#N/A**.

- VLOOKUP cannot look to the left: the lookup column must be the first column of the range.

XLOOKUP

XLOOKUP needs **Microsoft 365 or Excel 2021 and later** (it also works in Excel for the web). In Excel 2016 or 2019 it shows a #NAME? error, so use VLOOKUP there.

```
=XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found])
```

The same price lookup becomes `=XLOOKUP(F2,A2:A50,C2:C50,"Not found")`.

Compared with VLOOKUP:

- it does an **exact match by default**;
- the return column can be to the left or the right of the lookup column;
- there is no column number to count, so inserting a column does not break it;
- the optional fourth argument shows your own message instead of #N/A.

IFERROR, which works in all current versions, can also tidy VLOOKUP results:

```
=IFERROR(VLOOKUP(F2,$A$2:$C$50,3,FALSE),"Not found")
```

KEY POINTS

- IF(test, value_if_true, value_if_false) returns one of two results; text results go in double quotes.
- VLOOKUP searches the first column of a table and returns a value from a column to its right.
- Use FALSE as VLOOKUP's last argument for an exact match; a value that is not found gives #N/A.
- XLOOKUP needs Microsoft 365 or Excel 2021 and later; it matches exactly by default and can return from any column.

TRY THESE EXERCISES

1. In a marksheet with a Percentage column, add a Result column that uses IF to show Pass for 40 or more and Fail otherwise, and a Grade column with a nested IF that gives A for 75 and above, B for 50 and above, and C for the rest. If the percentages are shown with the % sign, write the limits as 40%, 75% and 50% in the formulas.
2. Make a price list of ten item codes, names and prices in A2:C11, type a code in F2 and show its price with =VLOOKUP(F2,\$A\$2:\$C\$11,3,FALSE), then type a code that does not exist to see #N/A and wrap the formula in IFERROR to show Not found.
3. In a sales list with City and Amount columns, count the sales from Delhi with COUNTIF and add their amounts with SUMIF; if your Excel is Microsoft 365 or Excel 2021 or later, also redo the price lookup with XLOOKUP and a "Not found" message.

CHAPTER 6

Sorting and Filtering Data

Sorting and filtering work best on a well-organised list: one heading row at the top, one record per row, no completely blank rows or columns inside the list, and the same kind of data in each column.

Sorting

Sorting rearranges the rows into an order.

1. Click any cell in the column you want to sort by.
2. On the **Data** tab, in the **Sort & Filter** group, click **Sort A to Z** or **Sort Z to A**. For numbers these mean smallest to largest and largest to smallest. The same commands are under **Home > Sort & Filter**.

Excel sorts the whole list and keeps each row together, so Amit's marks stay with Amit. Do not select one column on its own and sort it. If Excel shows a **Sort Warning**, choose **Expand the selection**; otherwise the names and the marks get mixed up.

Sorting by more than one column

Click **Data > Sort** to open the Sort dialog box. Tick **My data has headers**, then add levels. For example, sort an employee list by **City** from A to Z, then by **Salary** from largest to smallest within each city. You can also sort by cell colour, or by a custom list such as Jan, Feb, Mar instead of alphabetical order.

Filtering

Filtering hides the rows you do not need, without deleting them.

1. Click any cell in the list.
2. Click **Data > Filter** or press **Ctrl+Shift+L**. A drop-down arrow appears in each heading.
3. Click the arrow in the **City** column, untick **(Select All)**, and tick **Pune**. Only the rows for Pune are shown.

The row numbers of the visible rows turn blue, a reminder that some rows are hidden. Filters on different columns combine: City is Pune **and** Department is Sales. The drop-down also offers **Number Filters** (such as Greater Than or Top 10), **Text Filters** (such as Begins With) and **Date Filters**. Click **Clear** in the Sort & Filter group to show every row again; pressing **Ctrl+Shift+L** again removes the filter arrows.

Excel Tables

Press **Ctrl+T** (or **Insert > Table**) to turn a list into an Excel **Table**. A Table gets filter arrows and banded rows automatically, grows when you type a new row just below it, and copies a formula down the whole column when you enter it in one cell. The **Table Design** tab (Table Tools Design in older versions) can add a **Total Row**.

Freeze Panes

In a long list the headings scroll out of sight. **View > Freeze Panes > Freeze Top Row** keeps row 1 visible while you scroll down, and **Freeze First Column** does the same for column A. **Freeze Panes** itself freezes all the rows above and all the columns to the left of the selected cell.

Remove Duplicates

Data > Remove Duplicates deletes repeated rows, for example a customer who was entered twice. It deletes data, so work on a copy first.

If a sort goes wrong, press Ctrl+Z straight away to undo it.

KEY POINTS

- Keep one heading row and no blank rows inside a list you want to sort or filter.
- Sort A to Z or Z to A sorts whole rows; Data > Sort sorts by several columns.
- Filter (Ctrl+Shift+L) hides rows that do not match, without deleting them.
- Ctrl+T turns a list into an Excel Table with automatic filters and formatting.
- Freeze Top Row keeps the headings visible while you scroll.

TRY THESE EXERCISES

1. Make an employee list of 15 rows with Name, City, Department and Salary columns, then use Data > Sort with two levels to sort by City from A to Z and then by Salary from largest to smallest.
2. Turn on filters with Ctrl+Shift+L, show only the Sales department employees from Pune, then use Number Filters > Greater Than to show salaries above 30000, and finally clear all the filters.
3. Convert the list into an Excel Table with Ctrl+T and add a Total Row from the Table Design tab, freeze the heading row with View > Freeze Panes > Freeze Top Row, and on a copy of the sheet (right-click the sheet tab, choose Move or Copy and tick Create a copy) enter one employee twice and remove the repeat with Data > Remove Duplicates.

CHAPTER 7

Charts and Printing

Creating a chart

A chart turns numbers into a picture, so patterns are easy to see.

1. Select the data including the headings, for example the months in A1:A7 and the sales in B1:B7.
2. On the **Insert** tab, in the **Charts** group, click **Recommended Charts** or choose a chart type.
3. The chart appears on the sheet. Drag it to move it, and drag a corner handle to resize it.

Alt+F1 creates a chart of the default type on the current sheet instantly, and **F11** creates one on a separate chart sheet.

Choosing the right chart

Chart	Best for	Example
Column or Bar	Comparing values across categories	Sales of each branch
Line	Change over time	Monthly electricity units for a year
Pie	Parts of one whole	How a household budget is divided
Scatter	The relationship between two sets of numbers	Hours of study and test scores

A pie chart shows only one data series and works best with a few slices.

Parts of a chart

A chart can have a **chart title**, **axes** (the horizontal category axis and the vertical value axis), **axis titles**, a **legend** that names each series, **data labels** that show the values, and **gridlines**.

When a chart is selected, the **Chart Design** and **Format** tabs appear (under Chart Tools in older versions). **Add Chart Element** adds or removes titles, labels and the legend; **Change Chart Type** switches, for example, from column to line; **Switch Row/Column** swaps what is on the axis with what is in the legend; and **Chart Styles** change the colours and look. The buttons beside a selected chart (Chart Elements, Chart Styles and Chart Filters) give quick access to the same options. A chart is linked to its data, so it updates when the numbers change.

Printing a worksheet

A worksheet is not divided into pages the way a Word document is, so plan before you print.

- **File > Print (Ctrl+P)** shows a preview and the settings: printer, copies, pages, orientation, paper size and margins.
- Under scaling, choose **Fit Sheet on One Page**, **Fit All Columns on One Page** or **Fit All Rows on One Page**.
- **Page Layout > Orientation > Landscape** suits wide sheets.
- **Page Layout > Print Area > Set Print Area** prints only the selected range.

- **Page Layout > Print Titles** sets **Rows to repeat at top**, so the heading row prints on every page of a long list.
- **Page Layout > Sheet Options > Gridlines > Print** prints the gridlines, which are left off paper by default.
- **Insert > Header & Footer** adds page numbers, the file name or the date.
- **View > Page Break Preview** shows where the pages break; drag the blue lines to adjust them.

Always check the preview. A sheet that is only slightly too wide can push one column onto extra pages.

KEY POINTS

- Select the data with its headings and use **Insert > Recommended Charts** or a chart type.
- Column charts compare categories, line charts show change over time and pie charts show parts of a whole.
- The Chart Design and Format tabs add titles, labels and styles; charts update when the data changes.
- Fit Sheet on One Page, Print Area and Print Titles control what prints and how.
- Gridlines do not print unless you tick **Gridlines > Print**.

TRY THESE EXERCISES

1. Enter sales figures for six months, select them with their headings, insert a column chart, and use **Add Chart Element** to add a chart title, axis titles and data labels.
2. Make a household budget with five expense heads and show it as a pie chart, then switch your sales chart to a line chart with **Change Chart Type** and edit one sales figure to watch the chart update.
3. Prepare a 60-row list for printing: set Landscape orientation, use **Print Titles** to repeat the heading row at the top of every page, choose **Fit All Columns on One Page**, and check the preview under **File > Print**.

Practice questions

Choose the best answer for each question. The answers, with a short explanation, are in the next chapter.

1. What is the address of the cell in column C and row 7?

- a) 7C
- b) C:7
- c) CR7
- d) C7

2. How many cells are there in the range A1:C5?

- a) 8
- b) 15
- c) 5
- d) 10

3. A cell shows ##### instead of a number. What is the usual reason?

- a) The column is too narrow to display the value
- b) The formula refers to a deleted cell
- c) The sheet is protected with a password
- d) The cell contains text instead of a number

4. You type Jan in a cell and drag the fill handle down three cells. What appears in those cells?

- a) Feb, Mar and Apr
- b) Jan, Jan and Jan
- c) An error in each cell
- d) Jan1, Jan2 and Jan3

5. By default, how does Excel align a number typed into a cell?

- a) To the left of the cell
- b) In the centre of the cell
- c) Justified across the cell
- d) To the right of the cell

6. Which shortcut opens the Format Cells dialog box in Excel?

- a) Ctrl+F
- b) Ctrl+1
- c) Ctrl+M
- d) Alt+F1

7. Cell A1 holds 1500 and is formatted as Currency, so it shows ! 1,500.00. What does the formula =A1*2 return?

- a) #VALUE!
- b) 0
- c) 3000
- d) 1500

8. Which feature automatically colours cells when their values meet a rule, such as stock below 10?

- a) Format Painter
- b) Cell Styles
- c) Conditional Formatting
- d) Wrap Text

9. What does Wrap Text do to a cell?

- a) Shows long text on several lines in the cell
- b) Joins the cell with the empty cells beside it
- c) Hides any text that does not fit the column
- d) Rotates the text at an angle inside the cell

10. Why should you add borders to a table in Excel that you plan to print?

- a) Because gridlines do not print by default
- b) Because borders make the file smaller
- c) Because formulas need borders to calculate
- d) Because Excel cannot print cells without borders

11. What result does the formula =10+5*2 give in Excel?

- a) 30
- b) 20
- c) 25
- d) 12

12. A2:A6 contains five names and no numbers. What does =COUNT(A2:A6) return?

- a) 0
- b) 5
- c) 1
- d) #VALUE!

13. B2:B5 contains 10, 20, 30 and one empty cell. What does =AVERAGE(B2:B5) return?

- a) 15
- b) 60
- c) 20
- d) #DIV/0!

14. What does the shortcut Alt+= do in Excel?

- a) Opens the Format Cells dialog box
- b) Inserts an AutoSum formula
- c) Shows all formulas on the sheet
- d) Enters today's date

15. A cell shows the error #NAME?. What is the most likely cause?

- a) A number was divided by zero
- b) A function name is spelled wrongly
- c) A referenced cell was deleted
- d) The column is too narrow

16. Cell D2 contains =B2*C2. You copy it to D3. What formula does D3 contain?

- a) =B3*C3
- b) =B2*C2
- c) =B3*C2
- d) =C2*D2

17. Which reference stays exactly the same wherever the formula is copied?

- a) A1
- b) \$A\$1
- c) A\$1
- d) \$A1

18. While editing a formula, you place the cursor in a cell reference and press F4. What happens?

- a) The Insert Function dialog box opens on screen
- b) Excel moves to the next worksheet in the file
- c) The reference type changes, for example A1 to \$A\$1
- d) Excel starts checking the spelling of the sheet

19. In the mixed reference A\$1, which part stays fixed when the formula is copied?

- a) The column letter A
- b) Both the column and the row
- c) The row number 1
- d) Neither the column nor the row

20. What does the formula =Sales!B5 refer to?

- a) A range named Sales that starts at B5
- b) Cell B5 in a separate file called Sales.xlsx
- c) The total of cell B5 on every worksheet
- d) Cell B5 on the worksheet named Sales

21. Cell C2 contains 25. What does =IF(C2<10,"Reorder","OK") return?

- a) Reorder
- b) TRUE
- c) OK
- d) 25

22. What does FALSE mean as the last argument of VLOOKUP?

- a) Find an exact match only
- b) Find the closest smaller value
- c) Make the search case-sensitive
- d) Return FALSE when nothing is found

23. VLOOKUP is set to an exact match and the lookup value is not in the table. What does it return?

- a) #REF!
- b) 0
- c) #VALUE!
- d) #N/A

24. Which Excel versions support the XLOOKUP function?

- a) Every version since Excel 2007
- b) Microsoft 365 and Excel 2021 or later
- c) Only Excel 2010, Excel 2013 and Excel 2016
- d) Excel 2016 and Excel 2019 only

25. Which of these can XLOOKUP do that VLOOKUP cannot?

- a) Find a value in the first column of a table
- b) Find an exact match for a product code
- c) Return a value from a column to the right of the lookup column
- d) Return a value from a column to the left of the lookup column

26. What does the shortcut Ctrl+Shift+L do in a list?

- a) Converts the list into an Excel Table
- b) Turns the filter arrows on or off
- c) Sorts the list from A to Z
- d) Locks the selected cells

27. What happens to the rows that do not match a filter?

- a) They are deleted from the sheet permanently
- b) They are moved to a new worksheet at the end
- c) They are coloured red to show they do not match
- d) They are hidden until the filter is cleared

28. You select only the Name column of a list and click Sort A to Z. A Sort Warning appears. Why should you choose Expand the selection?

- a) So only the selected column is sorted
- b) So the list is sorted from Z to A instead
- c) So each row's data stays together
- d) So blank rows are deleted before sorting

29. What does pressing Ctrl+T do when a cell inside a list is selected?

- a) Converts the list into an Excel Table
- b) Inserts the current time in the cell
- c) Opens the Thesaurus for the selected word
- d) Swaps the rows and columns of the list

30. What is Freeze Top Row used for?

- a) Stopping other users from editing row 1
- b) Hiding row 1 while you work on the data
- c) Printing row 1 at the top of every page
- d) Keeping row 1 in view while scrolling

31. Which chart type is best for showing how one whole is divided into parts, such as a household budget?

- a) Line chart
- b) Scatter chart
- c) Pie chart
- d) Stock chart

32. What does pressing F11 do when data is selected in Excel?

- a) Creates a chart on the current worksheet
- b) Inserts a new blank worksheet
- c) Creates a chart on a separate chart sheet
- d) Starts the spelling check

33. Which command makes the heading row print at the top of every page of a long list?

- a) Freeze Panes
- b) Print Titles
- c) Set Print Area
- d) Page Break Preview

34. What does Page Layout > Print Area > Set Print Area do?

- a) Prints only the selected range
- b) Sets the page margins to Narrow
- c) Fits the whole sheet on one page
- d) Turns on printing of gridlines

35. You change some numbers that a chart is based on. What happens to the chart?

- a) It must be deleted and created again
- b) It shows an error until the file is saved
- c) It keeps showing the old numbers
- d) It updates to show the new numbers

ANSWER KEY

Answers

- 1. **(d) C7.** A cell address is the column letter followed by the row number, so column C and row 7 make C7.
- 2. **(b) 15.** A1:C5 covers 3 columns (A, B and C) and 5 rows, and 3 times 5 is 15 cells.
- 3. **(a) The column is too narrow to display the value.** Widen the column, for example by double-clicking the right border of its heading, and the number or date appears.
- 4. **(a) Feb, Mar and Apr.** AutoFill recognises month names and continues the series.
- 5. **(d) To the right of the cell.** Numbers and dates align to the right by default, while text aligns to the left.
- 6. **(b) Ctrl+1.** Ctrl+1 opens Format Cells. Ctrl+F opens Find, and Alt+F1 inserts a chart.
- 7. **(c) 3000.** Formatting changes only how the value looks. The stored value is still the number 1500, so the formula returns 3000.
- 8. **(c) Conditional Formatting.** Conditional Formatting applies formatting based on each cell's value and updates when the values change.
- 9. **(a) Shows long text on several lines in the cell.** Wrap Text keeps the text inside the column width by breaking it into lines. Joining cells is done with Merge & Center.

10. **(a) Because gridlines do not print by default.** Gridlines are only a screen guide unless Gridlines > Print is ticked, so borders make the table lines appear on paper.
11. **(b) 20.** Multiplication is done before addition, so $5*2 = 10$ is calculated first and then 10 is added.
12. **(a) 0.** COUNT counts only cells that contain numbers. COUNTA would return 5, because it counts every cell that is not empty.
13. **(c) 20.** AVERAGE ignores empty cells, so it divides 60 by 3. If the empty cell held 0, the result would be 15.
14. **(b) Inserts an AutoSum formula.** Alt+= writes a SUM formula for the numbers above or beside the active cell.
15. **(b) A function name is spelled wrongly.** #NAME? appears when Excel does not recognise a name in the formula, such as =SUMM instead of =SUM.
16. **(a) =B3*C3.** Relative references move with the formula, so copying it down one row changes both references by one row.
17. **(b) \$A\$1.** The dollar signs before both the column and the row make \$A\$1 an absolute reference.
18. **(c) The reference type changes, for example A1 to \$A\$1.** Each press of F4 cycles the reference through A1, \$A\$1, A\$1 and \$A1.
19. **(c) The row number 1.** The dollar sign is placed before the part that is locked. In A\$1 it is before the row number.
20. **(d) Cell B5 on the worksheet named Sales.** A sheet name followed by an exclamation mark points to a cell on that sheet.
21. **(c) OK.** The test $C2 < 10$ is false because 25 is not less than 10, so IF returns the value_if_false, which is OK.
22. **(a) Find an exact match only.** FALSE asks VLOOKUP for an exact match. Leaving it out gives an approximate match, which needs sorted data.
23. **(d) #N/A.** #N/A means "not available": the value was not found.
24. **(b) Microsoft 365 and Excel 2021 or later.** XLOOKUP is available in Microsoft 365, Excel 2021 and later, and Excel for the web. In Excel 2016 or 2019 it gives a #NAME? error.
25. **(d) Return a value from a column to the left of the lookup column.** VLOOKUP can only return values from columns to the right of its first column. XLOOKUP takes separate lookup and return ranges, so the return range can be on either side.
26. **(b) Turns the filter arrows on or off.** Ctrl+Shift+L applies or removes the filter drop-down arrows, the same as Data > Filter.
27. **(d) They are hidden until the filter is cleared.** Filtering only hides rows. Clearing the filter shows them again, unchanged.
28. **(c) So each row's data stays together.** Expanding the selection sorts the whole list, so every name keeps its own marks or values. Sorting one column alone mixes up the records.
29. **(a) Converts the list into an Excel Table.** Ctrl+T creates a Table with filter arrows, banded rows and automatic expansion.

30. (d) Keeping row 1 in view while scrolling.

Freeze Top Row keeps the headings in view on screen. Printing a row on every page is done with Print Titles.

31. (c) Pie chart. A pie chart shows each part as a slice of a single whole.

32. (c) Creates a chart on a separate chart sheet. F11 makes a chart on its own chart sheet. Alt+F1 creates one on the current sheet.

33. (b) Print Titles. Page Layout > Print Titles has the Rows to repeat at top box, which prints the chosen rows at the top of each page.

34. (a) Prints only the selected range. Once a print area is set, only that range is printed until the print area is cleared.

35. (d) It updates to show the new numbers. A chart is linked to its source data, so it redraws as soon as the data changes.

WORD LIST

Glossary

Absolute reference

A cell reference with dollar signs, such as \$F\$1, that stays exactly the same when the formula is copied.

Argument

A value, cell or range given to a function inside its brackets, such as B2:B10 in =SUM(B2:B10).

AutoSum

A button, with the shortcut Alt+=, that inserts a SUM formula for the numbers above or to the left of the active cell and also offers Average, Count Numbers, Max and Min.

Cell

The box where a column and a row meet, which holds one value, piece of text or formula.

Cell reference

The address of a cell, written as its column letter followed by its row number, such as B4.

Chart

A picture of worksheet data, such as a column, line or pie chart, that updates when the data changes.

Conditional Formatting

A Home tab feature that changes a cell's look automatically, for example colouring it red, when its value meets a rule you set.

Excel Table

A list converted with Ctrl+T that gets filter arrows and banded rows and grows automatically when you type a new row just below it.

Fill handle

The small square at the bottom-right corner of the active cell, dragged to copy a value or formula or to continue a series such as Jan, Feb, Mar.

Filter

A Data tab tool, turned on with Ctrl+Shift+L, that hides the rows that do not match your choices without deleting them.

Formula

A calculation typed in a cell that starts with an equals sign, such as =B2*C2.

Formula Bar

The bar above the column headings that shows, and lets you edit, the content or formula of the active cell.

Freeze Panes

A View tab command that keeps chosen rows or columns, such as the heading row, visible while you scroll.

Function

A ready-made formula with a name, such as SUM, AVERAGE or MAX, that works on the arguments given in its brackets.

IF function

A function that tests a condition and returns one value when the condition is true and another when it is false.

Mixed reference

A cell reference that locks only the column or only the row, such as \$A1 or A\$1.

Number format

The way a number is displayed, such as Currency, Percentage or Date, which does not change the value stored in the cell.

Print Titles

A Page Layout setting that repeats chosen rows, such as the heading row, at the top of every printed page.

Range

A group of cells written with a colon between the first and last cell, such as A1:C5.

Relative reference

An ordinary cell reference, such as B2, that shifts to match its new position when the formula is copied.

Sort

To rearrange rows into an order, such as A to Z or largest to smallest, while keeping each row's data together.

VLOOKUP

A function that finds a value in the first column of a table and returns the value from a chosen column to its right in the same row.

Workbook

An Excel file, saved with the .xlsx extension, that contains one or more worksheets.

Worksheet

A single sheet in a workbook, made of a grid of columns and rows, with its name shown on a tab at the bottom of the window.

XLOOKUP

A lookup function in Microsoft 365 and Excel 2021 and later that searches one column or row and returns the matching value from another, matching exactly by default.



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