

Excel Lookup Functions Tutorial

A Practical Step-by-Step Guide with Exercises & Hands-on Datasets

What You Will Learn

Master the core data retrieval functions in Excel through interactive exercises:

- **VLOOKUP** — Traditional vertical lookup for structured tables
- **XLOOKUP** — Modern, flexible, and robust lookup replacement
- **INDEX & MATCH** — Dynamic positional lookup combination
- **CHOOSE** — Option-based index selection

1 VLOOKUP — Find Related Data

TRADITIONAL

Dataset (A1:D6):

A (Student ID)	B (Name)	C (Course)	D (Fees)
S101	Ali	Python	8000
S102	Sara	Excel	6000
S103	Ahmed	Power BI	9000
S104	Ayesha	Python	8000
S105	Imran	Excel	6000

Exercise: Suppose cell **F2** contains **S103**. Find the *Name* of the student.

```
=VLOOKUP(F2, A2:D6, 2, FALSE)
```

Result: Ahmed

How it works:

- **F2** → Lookup value (S103)
- **A2:D6** → Table array containing lookup and result columns
- **2** → Column index number to return (Column B: Name)
- **FALSE** → Exact match required

Try these exercises (Change F2):

- **S101** → Ali
- **S104** → Ayesha
- **S105** → Imran

2 XLOOKUP — Modern Lookup

RECOMMENDED

XLOOKUP is a modern, powerful alternative to VLOOKUP that doesn't require column counting and can search in any direction.

Exercise: Using the student table above, with cell **F2** = **S104**, find the student's *Course*.

```
=XLOOKUP(F2, A2:A6, C2:C6)
```

Result: Python

Formula Parameters:

- **F2** → Value to search for
- **A2:A6** → Search array (Student IDs)
- **C2:C6** → Return array (Courses)

Why XLOOKUP is superior: Unlike VLOOKUP, XLOOKUP can look left! For example, if Name is in Col A and ID is in Col B, **=XLOOKUP("Ahmed", A2:A4, B2:B4)** returns **S103** effortlessly.

3 INDEX & 4 MATCH — Core Concepts

POSITIONAL

Product Sales Table (A1:D5):

A (Product)	B (Jan)	C (Feb)	D (Mar)
Laptop	50000	55000	60000
Mobile	30000	32000	35000
Tablet	20000	22000	25000
Monitor	15000	16000	18000

INDEX Exercise: Get value at Row 3, Column 2 within range **B2:D5**.

```
=INDEX(B2:D5, 3, 2)
```

Result: 22000

MATCH Exercise: Find the relative row position of "Tablet" in **A2:A5**.

```
=MATCH("Tablet", A2:A5, 0)
```

Result: 3 (1: Laptop, 2: Mobile, 3: Tablet, 4: Monitor)

5 INDEX + MATCH — Two-Way Dynamic Lookup

ADVANCED

Combine INDEX and MATCH to locate values dynamically across both rows and columns. This is an essential technique for data analysts working with flexible datasets.

Exercise: Find the *February* sales for *Tablet*.

```
=INDEX(B2:D5, MATCH("Tablet", A2:A5, 0), MATCH("Feb", B1:D1, 0))
```

Result: 22000

Step-by-Step Breakdown:

1. `MATCH("Tablet", A2:A5, 0)` → Finds row position = 3
2. `MATCH("Feb", B1:D1, 0)` → Finds column position = 2
3. `INDEX(B2:D5, 3, 2)` → Retrieves the cell value at Row 3, Column 2 = 22000

6 CHOOSE — Select From Options

SELECTION

CHOOSE returns a value from a list of options based on an index/position number.

Exercise: Return a course name based on Option Number in cell **B2** (Value = 2).

```
=CHOOSE(B2, "Excel", "Power BI", "Python")
```

Result: Power BI

If B2 = 1 → Excel | If B2 = 2 → Power BI | If B2 = 3 → Python



Final Practice Exercise

COMPREHENSIVE

Employee Dataset (A1:D6):

Employee ID (A)	Employee Name (B)	Department (C)	Salary (D)
E101	Ali	Sales	₹30,000
E102	Sara	HR	₹35,000
E103	Ahmed	IT	₹45,000
E104	Ayesha	Finance	₹40,000
E105	Imran	IT	₹50,000

Exercise	Task	Formula	Answer
Ex 1: VLOOKUP	F2 = E103, find Department	<code>=VLOOKUP(F2, A2:D6, 3, FALSE)</code>	IT
Ex 2: XLOOKUP	F2 = E105, find Salary	<code>=XLOOKUP(F2, A2:A6, D2:D6)</code>	₹50,000
Ex 3: MATCH	Find position of "Ayesha"	<code>=MATCH("Ayesha", B2:B6, 0)</code>	4
Ex 4: INDEX	Salary from 3rd row of Salary col	<code>=INDEX(D2:D6, 3)</code>	₹45,000
Ex 5: INDEX+MATCH	Find Salary of "Sara"	<code>=INDEX(D2:D6, MATCH("Sara", B2:B6, 0))</code>	₹35,000
Ex 6: CHOOSE	F2 = 3, select from Sales/HR/IT	<code>=CHOOSE(F2, "Sales", "HR", "IT")</code>	IT



Quick Cheat Sheet & Data Analyst Tip

Function	Main Use	Example Syntax
VLOOKUP	Search vertically (left-to-right)	<code>=VLOOKUP(val, table, col, FALSE)</code>
XLOOKUP	Flexible search (any direction)	<code>=XLOOKUP(val, search_range, return_range)</code>
INDEX	Get cell value by row/col position	<code>=INDEX(array, row_num, [col_num])</code>
MATCH	Find relative position of item	<code>=MATCH(val, array, 0)</code>
CHOOSE	Select value by index option	<code>=CHOOSE(index_num, val1, val2, ...)</code>



Data Analyst Hierarchy: Prioritize learning in this order: **XLOOKUP** → **INDEX + MATCH** → **VLOOKUP**. Modern workflows heavily favor XLOOKUP and dynamic INDEX+MATCH due to their flexibility and robustness against table structure changes.