Lookup & Data Functions

Master data retrieval and conditional calculations

12 Cheatsheets **50+** Functions

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Lookup Functions
XLOOKUP • VLOOKUP • INDEX/MATCH

Conditional Logic
SUMIFS • COUNTIFS • FILTER

XLOOKUP Guide

The modern replacement for VLOOKUP and HLOOKUP

Syntax

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

Arguments

`lookup_value`	The value you want to find
`lookup_array`	The range containing possible lookup values
`return_array`	The range containing values to return
`[if_not_found]`	Optional. Value to return if not found
`[match_mode]`	Optional. 0=exact, -1=less than, 1=greater than
`[search_mode]`	Optional. 1=first to last, -1=last to first

Examples

1. Basic XLOOKUP

```
=XLOOKUP("Apple", A2:A10, B2:B10)
```

Searches for "Apple" and returns the corresponding value.

2. Handling Not Found

```
=XLOOKUP(lookup, A2:A10, B2:B10, "Not Found")
```

Returns "Not Found" if the value doesn't exist.

3. Reverse Lookup

```
=XLOOKUP(lookup, B2:B10, A2:A10)
```

Searches in column B, returns from column A.

4. With Error Handling

```
=IFERROR(XLOOKUP(lookup, A2:A10, B2:B10), 0)
```

Wraps with IFERROR for additional control.

Pro Tips

- ✓ Use wildcards (* and ?) for partial matches
- ✓ Performs exact match by default

VLOOKUP vs XLOOKUP

Understanding when to use each lookup function

ASPECT	VLOOKUP	XLOOKUP
Syntax	VLOOKUP(value, table, col_index, [range_lookup])	XLOOKUP(value, lookup_array, return_array, [if_not_found])
Direction	Left to right only	Any direction
Default Match	Approximate (requires TRUE/FALSE)	Exact match
Column Index	Required (breaks if columns change)	Not needed
Not Found Handling	Returns #N/A error	Custom value option
Performance	Slower with large data	Faster and more efficient
Compatibility	All Excel versions	Excel 365 / 2021+

Same Task, Different Approach

Find the name of employee with ID "1003"

VLOOKUP:

```
=VLOOKUP(1003, B2:C5, 2, FALSE)
```

Searches column B, returns from 2nd column of range, exact match

XLOOKUP:

```
=XLOOKUP(1003, B2:B5, C2:C5)
```

Searches column B, returns from column C, exact match by default

When to Use Each

VLOOKUP When working with legacy spreadsheets or sharing with users on older Excel versions

XLOOKUP For new work—it's more flexible, handles errors better, and doesn't break when columns shift

SUMIFS Cheatsheet

Sum values based on multiple criteria

Syntax

```
=SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)
```

Arguments

`sum_range`	The range of cells to sum
`criteria_range1`	The range to apply the first condition
`criteria1`	The condition to be met in criteria_range1
`[criteria_range2, ...]`	Additional ranges and conditions

Examples

Basic SUMIFS

```
=SUMIFS(C2:C10, B2:B10, "Product A")
```

Sum of Sales where Product is "Product A"

Multiple Conditions

```
=SUMIFS(D2:D10, B2:B10, "North", C2:C10, "Q1")
```

Sum Revenue where Region is "North" AND Quarter is "Q1"

Date Range

```
=SUMIFS(C2:C10, A2:A10, ">=1/1/2024", A2:A10, "<=31/1/2024")
```

Sum values for dates within January 2024

With Wildcards

```
=SUMIFS(C2:C10, B2:B10, "Product*")
```

Sum where Product starts with "Product"

Not Equal To

```
=SUMIFS(C2:C10, B2:B10, "<>Excluded")
```

Sum all except where value is "Excluded"

Greater Than Cell

```
=SUMIFS(C2:C10, C2:C10, ">"&E1)
```

Sum values greater than the value in E1

Comparison Operators

`=` Equal to (default)	`<>` Not equal to	`>` Greater than	`<` Less than
`>=` Greater than or equal	`<=` Less than or equal	`*` Wildcard (any characters)	`?` Wildcard (single character)

IF Function Cheatsheet

Logical tests and conditional returns

Syntax

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

Basic Examples

Basic IF

```
=IF(A1>10, "Yes", "No")
```

If A1 > 10, return "Yes"; otherwise "No"

Nested IF

```
=IF(A1>10, "High", IF(A1>5, "Medium", "Low"))
```

Multiple conditions with cascading results

Advanced Options

IF with AND

```
=IF(AND(A1>10, B1="Yes"), "Pass", "Fail")
```

Both conditions must be true

IF with OR

```
=IF(OR(A1>10, B1="Yes"), "Pass", "Fail")
```

Either condition can be true

Error Handling

IFERROR

```
=IFERROR(A1/B1, 0)
```

Return 0 if formula errors

IFNA

```
=IFNA(VLOOKUP(...), "Not Found")
```

Handle #N/A errors specifically

INDEX & MATCH

The powerful lookup combination for any scenario

Combined Syntax

```
=INDEX(return_range, MATCH(lookup_value, lookup_range, 0))
```

INDEX Arguments

`array`	The range of cells to return a value from
`row_num`	The row number to return
`[col_num]`	Optional. The column number to return

MATCH Arguments

`lookup_value`	The value to search for
`lookup_array`	The range to search in
`[match_type]`	0 = exact, 1 = less than, -1 = greater than

Examples

Basic INDEX/MATCH

```
=INDEX(C2:C10, MATCH("Apple", A2:A10, 0))
```

Find "Apple" in column A, return value from column C

2D Lookup

```
=INDEX(B2:D10, MATCH("Q2", A2:A10, 0), MATCH("Sales", B1:D1, 0))
```

Look up both row and column headers

Left Lookup

```
=INDEX(A2:A10, MATCH(100, C2:C10, 0))
```

Return value from column to the LEFT of search column

INDEX/MATCH vs XLOOKUP

ASPECT	INDEX/MATCH	XLOOKUP
Direction	Any direction	Any direction
2D Lookup	Yes (native)	Requires nesting
Complexity	More complex	Simpler syntax
Compatibility	All versions	Excel 365/2021+

COUNTIFS Cheatsheet

Count cells based on multiple criteria

Syntax

```
=COUNTIFS(criteria_range1, criteria1, [criteria_range2, criteria2], ...)
```

Arguments

`criteria_range1`	The first range to evaluate
`criteria1`	The condition to apply to range1
`[criteria_range2, ...]`	Additional ranges and conditions

Examples

Single Condition

```
=COUNTIFS(B2:B10, "Yes")
```

Count cells where value is "Yes"

Multiple Conditions

```
=COUNTIFS(B2:B10, "North", C2:C10, ">1000")
```

Count where Region is "North" AND Sales > 1000

Date Range

```
=COUNTIFS(A2:A10, ">=1/1/2024", A2:A10, "<=31/12/2024")
```

Count entries within 2024

Not Equal

```
=COUNTIFS(B2:B10, "<>Cancelled")
```

Count all except "Cancelled"

With Wildcards

```
=COUNTIFS(B2:B10, "Product*")
```

Count cells starting with "Product"

Non-Blank Cells

```
=COUNTIFS(B2:B10, "<>")
```

Count all non-empty cells

Comparison Operators

`=` Equal (default)	`<>` Not equal	`>` Greater than	`<` Less than
`>=` Greater or equal	`<=` Less or equal	`*` Any characters	`?` Single character

Date Functions Guide

Essential functions for working with dates

Key Date Functions

`TODAY()`

`=TODAY()`

Returns the current date

Use for age calculations, due dates

`NOW()`

`=NOW()`

Returns current date and time

Timestamps, real-time tracking

`DATE()`

`=DATE(year, month, day)`

Creates a date from components

=DATE(2024, 12, 25)→ Dec 25, 2024

`EOMONTH()`

`=EOMONTH(start_date, months)`

Last day of month after adding months

=EOMONTH(A1, 3)→ 3 months later, end of month

`EDATE()`

`=EDATE(start_date, months)`

Date after adding/subtracting months

=EDATE(A1, -6)→ 6 months before

`NETWORKDAYS()`

`=NETWORKDAYS(start, end, [holidays])`

Working days between two dates

Exclude weekends and holidays

Extract Date Parts

`YEAR(date)` Extract year (e.g., 2024)	`MONTH(date)` Extract month (1–12)
`DAY(date)` Extract day (1–31)	`WEEKDAY(date)` Day of week (1–7)
`WEEKNUM(date)` Week number (1–52)	

Pro Tips

- ✓ Dates are stored as numbers (days since 1/1/1900)
- ✓ Use DATE() to avoid regional format issues
- ✓ EOMONTH is perfect for financial period ends

FILTER Function Guide

Dynamic filtering with Excel 365

Syntax

```
=FILTER(array, include, [if_empty])
```

Arguments

`array` The range or array to filter

`include` Boolean array (conditions that evaluate to TRUE/FALSE)

`[if_empty]` Optional. Value to return if no results

Examples

Single Condition

```
=FILTER(A2:C10, B2:B10="Yes")
```

Return rows where column B is "Yes"

Multiple Conditions (AND)

```
=FILTER(A2:C10, (B2:B10="North")*(C2:C10>1000))
```

Region is "North" AND Sales > 1000

With Empty Handler

```
=FILTER(A2:C10, B2:B10="East", "No data")
```

Returns "No data" if no matches

Key Features

Dynamic Arrays

Results automatically spill to adjacent cells

Multiple Columns

Returns entire rows, not just one column

Live Updates

Results update when source data changes

Nestable

Combine with SORT, UNIQUE, etc.

XMATCH Cheatsheet

Modern position matching in Excel 365

Syntax

```
=XMATCH(lookup_value, lookup_array, [match_mode], [search_mode])
```

Arguments

`lookup_value`	The value you want to search for
`lookup_array`	The range to search within
`[match_mode]`	0 = exact (default), -1 = next smallest, 1 = next largest, 2 = wildcard
`[search_mode]`	1 = first-to-last, -1 = last-to-first, 2 = binary ascending, -2 = binary descending

Examples

Exact Match

```
=XMATCH("Apple", A2:A10)
```

Returns position of "Apple" in the range

Wildcard Search

```
=XMATCH("*son", A2:A10, 2)
```

Finds names ending with "son"

Reverse Search

```
=XMATCH("Yes", C2:C20, 0, -1)
```

Finds last occurrence of "Yes"

XMATCH vs MATCH

Feature	XMATCH	MATCH
Exact match default	✓	✗
Reverse search	✓	✗
Wildcard support	✓	✗
Binary search	✓	✓
No sort required	✓	✗

Lookup Functions

Complete guide to finding data in Excel

Function Reference

`VLOOKUP`	Search first column, return from another	*Legacy, left-to-right only*
`HLOOKUP`	Search first row, return from another	*Legacy, top-to-bottom only*
`XLOOKUP`	Modern replacement for V/HLOOKUP	*Any direction, better defaults*
`INDEX`	Return value at intersection	*Works with MATCH*
`MATCH`	Find position in range	*Combine with INDEX*
`XMATCH`	Modern MATCH with more options	*Reverse search, wildcards*

Which Function to Use?

Scenario	Best Choice
Simple vertical lookup	XLOOKUP or VLOOKUP
Lookup to the left	XLOOKUP or INDEX/MATCH
Two-way lookup (row & col)	INDEX + XMATCH
Find last occurrence	XLOOKUP with -1 search
Approximate match	XLOOKUP with match_mode

Common Patterns

XLOOKUP (Recommended)

```
=XLOOKUP(A1, Products, Prices, "Not found")
```

INDEX/MATCH Classic

```
=INDEX(C:C, MATCH(A1, B:B, 0))
```

Two-Way Lookup

```
=INDEX(B2:E10, XMATCH(G1,A2:A10), XMATCH(G2,B1:E1))
```

Pro Tips

✓ Do

Use XLOOKUP for new work—it's more flexible and has better defaults

✗ Avoid

VLOOKUP with TRUE for range lookup—data must be sorted

💡 Tip

Wrap lookups in IFERROR or use XLOOKUP's if_not_found argument

💡 Tip

INDEX/MATCH still works when XLOOKUP isn't available

Conditional Functions

Logic, conditions & criteria-based calculations

Logic Functions

`IF`	Single condition check
`AND`	TRUE if ALL conditions true
`NOT`	Reverses TRUE/FALSE
`IFS`	Multiple conditions (no nesting)
`OR`	TRUE if ANY condition true
`XOR`	TRUE if ODD number true

Conditional Calculations

`SUMIF`	Sum with 1 condition
`SUMIFS`	Sum with multiple conditions
`COUNTIF`	Count with 1 condition
`COUNTIFS`	Count with multiple conditions
`AVERAGEIF`	Average with 1 condition
`AVERAGEIFS`	Average with multiple conditions

Examples

Nested IF → IFS

❌ Nested:

```
=IF(A1>90,"A",IF(A1>80,"B",IF(A1>70,"C","F")))
```

✓ IFS:

```
=IFS(A1>90,"A",A1>80,"B",A1>70,"C",TRUE,"F")
```

Multiple Conditions

```
=SUMIFS(Sales, Region, "North", Date, ">="&DATE(2024,1,1))
```

Sum sales in North from 2024

AND/OR in IF

```
=IF(AND(A1>100, B1="Yes"), "Approved", "Review")
```

Both conditions must be true

Wildcard Characters

`*`	Any characters	`="*smith"` matches "John Smith"
`?`	Single character	`="Sm?th"` matches "Smith" or "Smyth"
`~`	Escape wildcard	`="~*"` matches literal asterisk

Aggregation Functions

SUMPRODUCT, SUBTOTAL, and AGGREGATE mastery

SUMPRODUCT Patterns

Weighted Average

```
=SUMPRODUCT(Values, Weights)/SUM(Weights)
```

Calculate weighted average without helper column

Conditional Sum

```
=SUMPRODUCT((Region="East")*(Product="A")*Sales)
```

Multiple criteria without SUMIFS

Count with Criteria

```
=SUMPRODUCT((Status="Complete")*1)
```

Count matching rows

SUBTOTAL Function Codes

1 / 101	**AVERAGE**	101 ignores hidden rows
2 / 102	**COUNT**	102 ignores hidden rows
3 / 103	**COUNTA**	103 ignores hidden rows
9 / 109	**SUM**	109 ignores hidden rows
4 / 104	**MAX**	104 ignores hidden rows

AGGREGATE Options

=AGGREGATE(function_num, options, range)

1	**AVERAGE**	Ignore errors	Ignore hidden + errors
4	**MAX**	Ignore errors	Ignore hidden + errors
5	**MIN**	Ignore errors	Ignore hidden + errors
9	**SUM**	Ignore errors	Ignore hidden + errors
14	**LARGE**	Ignore errors	Ignore hidden + errors

Accounting Applications

Filtered Trial Balance

```
=SUBTOTAL(109, DebitCol) - SUBTOTAL(109, CreditCol)
```

Works with filtered data automatically

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