Excel Functions – Definition & Syntax

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1. SUM()

Definition: Adds up all numbers in a range.
Syntax:

=SUM(number1, [number2], ...)

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2. AVERAGE()

Definition: Returns the average (arithmetic mean) of numbers.
Syntax:

=AVERAGE(number1, [number2], ...)

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3. COUNT()

Definition: Counts the number of numeric values in a range.
Syntax:

=COUNT(value1, [value2], ...)

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4. MIN()

Definition: Returns the smallest number in a range.
Syntax:

=MIN(number1, [number2], ...)

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5. MAX()

Definition: Returns the largest number in a range.
Syntax:

=MAX(number1, [number2], ...)

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6. SUMIF() – *Single condition*

Definition: Adds numbers in a range that meet one condition.
Syntax:

=SUMIF(range, criteria, [sum_range])

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7. SUMIFS() – *Multiple conditions*

Definition: Adds numbers in a range that meet multiple conditions.
Syntax:

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

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8. IF()

Definition: Returns one value if a condition is TRUE, another if FALSE.
Syntax:

=IF(logical_test, value_if_true, value_if_false)

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9. COUNTIF()

Definition: Counts the number of cells that meet one condition.
Syntax:

=COUNTIF(range, criteria)

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10. COUNTIFS()

Definition: Counts the number of cells that meet multiple conditions.
Syntax:

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

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11. LEFT()

Definition: Extracts characters from the start of a text string.
Syntax:

=LEFT(text, num_chars)

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12. RIGHT()

Definition: Extracts characters from the end of a text string.
Syntax:

=RIGHT(text, num_chars)

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13. TRIM()

Definition: Removes all extra spaces from text (except single spaces between words).
Syntax:

=TRIM(text)

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14. COUNTA()

Definition: Counts the number of non-empty cells (numbers, text, etc.).
Syntax:

=COUNTA(value1, [value2], ...)

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15. CONCATENATE() (or CONCAT in new Excel)

Definition: Joins multiple text strings into one.
Syntax:

=CONCATENATE(text1, [text2], ...)

(or in newer versions)

=CONCAT(text1, [text2], ...)

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16. UPPER()

Definition: Converts text to uppercase.
Syntax:

=UPPER(text)

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17. LOWER()

Definition: Converts text to lowercase.
Syntax:

=LOWER(text)

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18. LEN()

Definition: Returns the number of characters in a text string (including spaces).
Syntax:

=LEN(text)

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19. OR()

Definition: Returns TRUE if *any* condition is TRUE. Often used inside IF.
Syntax:

=OR(logical1, [logical2], ...)

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20. AND()

Definition: Returns TRUE only if *all* conditions are TRUE. Often used inside IF.
Syntax:

=AND(logical1, [logical2], ...)

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21. MAXIFS()

Definition: Returns the maximum value from a range that meets one or more conditions.
Syntax:

=MAXIFS(max_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)

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22. MINIFS()

Definition: Returns the minimum value from a range that meets one or more conditions.
Syntax:

=MINIFS(min_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)

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23. MAXA()

Definition: Returns the largest value in a range (treats TRUE as 1 and text as 0).
Syntax:

=MAXA(value1, [value2], ...)

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24. RANK()

Definition: Returns the rank of a number in a list (position when sorted).
Syntax:

=RANK(number, ref, [order])

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25. VLOOKUP()

Definition: Looks for a value in the first column and returns a value from another column in the same row.
Syntax:

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

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26. HLOOKUP()

Definition: Looks for a value in the first row and returns a value from another row in the same column.
Syntax:

=HLOOKUP(lookup_value, table_array, row_index_num, [range_lookup])

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27. XLOOKUP()

Definition: Searches a range/array and returns a value from another range/array (works both horizontally & vertically).
Syntax:

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

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28. IFERROR()

Definition: Returns a custom value if a formula results in an error.
Syntax:

=IFERROR(value, value_if_error)

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29. NESTED IF

Definition: Multiple IF functions inside one another to test more than one condition.
Syntax:

=IF(condition1, result1, IF(condition2, result2, result3))

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30. MATCH()

Definition: Returns the relative position of a value in a range.
Syntax:

=MATCH(lookup_value, lookup_array, [match_type])

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31. XMATCH()

Definition: Returns the position of an item with more options (reverse search, wildcards, etc.).
Syntax:

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

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32. INDEX()

Definition: Returns the value of a cell at a given row & column in a range.
Syntax:

=INDEX(array, row_num, [column_num])

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33. INDEX with XMATCH

Definition: Used together to create powerful lookups (replacement for VLOOKUP/HLOOKUP).
Syntax:

=INDEX(return_array, XMATCH(lookup_value, lookup_array))