TOP EXCEL FUNCTIONS
FOR DATA ANALYSTS
CHEAT SHEET

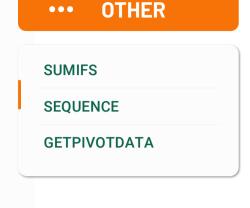### LOGIC

IF

Nested IF

IFS

IF AND

IF OR

IFERROR

IFNA

LOOKUP

XLOOKUP

VLOOKUP

INDEX

MATCH

INDEX & MATCH

FILTER

UNIQUE

SORT

DATES

EOMONTH

EDATE

NETWORKDAYS.INTL

OTHER

SUMIFS

SEQUENCE

GETPIVOTDATA

Click on the function name to move to the description. *fx*

FUNCTION new in	SYNTAX [OPTIONAL]	DESCRIPTION
IF	**Example:**	**=IF(C2>B2, C2*10%, 0)**
Test for a condition to be met and returns one value if TRUE and another if FALSE.	=IF(	
	logical_test,	is any value or expression that can be evaluated to TRUE or FALSE
	[value_if_true],	is the value returned if logical_test is TRUE
	[value_if_false]	is the value returned if logical_test is FALSE
	)	
Nested IF	**Example:**	**=IF(C2>B2, C2*10%, IF(B2>C2, B2*10%, 0))**
Tests multiple conditions to be met and returns the corresponding value if TRUE or value if FALSE. Excel 2019 onward users should use IFS.	=IF(	
	logical_test,	is any value or expression that can be evaluated to TRUE or FALSE
	value_if_true,	is the value returned if logical_test is TRUE
	IF(	if previous logical test is FALSE, moves on to next IF
	logical_test2,	is any value or expression that can be evaluated to TRUE or FALSE
	value_if_true2,	is the value returned if logical_test is TRUE
	IF(...	if previous logical test is FALSE, moves on to next IF and so on
	)))	
IFS 2019	**Example:**	**=IFS(C2>B2, C2*10%, B2>C2, B2*10%)**
Checks whether one or more conditions are met and returns a value corresponding to the first TRUE.	=IFS(	
	logical_test1,	is any value or expression that can be evaluated to TRUE or FALSE
	value_if_true1,	is the value returned if logical_test is TRUE
	logical_test2,	is any value or expression that can be evaluated to TRUE or FALSE
	value_if_true2...	is the value returned if logical_test is TRUE
	)	

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FUNCTION	SYNTAX [OPTIONAL]	DESCRIPTION

IF AND

Checks whether ALL conditions are met and returns a value corresponding to the first TRUE.

Example: **=IF(AND(C2>B2, D2="NO"), C2*10%, 0)**

```
=IF(
    AND(
        logical_test1,
        logical_test2,
        ...)
    [value_if_true],
    [value_if_false]
)
```

AND(	multiple logical tests that all return TRUE
logical_test1,	is any value or expression that can be evaluated to TRUE or FALSE
logical_test2,	is any value or expression that can be evaluated to TRUE or FALSE
...)	returns TRUE if all logical tests return TRUE, otherwise returns FALSE
[value_if_true],	is the value returned if logical_test is TRUE
[value_if_false]	is the value returned if logical_test is TRUE

IF OR

Checks whether one or more conditions are met and returns one value if TRUE and another if FALSE.

Example: **=IF(OR(C2>B2, D2="NO"), C2*10%, 0)**

```
=IF(
    OR(
        logical_test1,
        logical_test2,
        ...)
    [value_if_true],
    [value_if_false]
)
```

OR(	multiple logical tests where one or more can return true
logical_test1,	is any value or expression that can be evaluated to TRUE or FALSE
logical_test2,	is any value or expression that can be evaluated to TRUE or FALSE
...)	returns TRUE if one or more logical tests return TRUE, otherwise returns FALSE
[value_if_true],	is the value returned if logical_test is TRUE
[value_if_false]	is the value returned if logical_test is TRUE

IFERROR

Returns the value you specify if the expression returns an error, otherwise returns the expression.

Example: **=IFERROR(SUMIFS(C2:C100, A2:A100, "South", B2:B100, "Finance"), 0)**

```
=IFERROR(
    value,
    value_if_error
)
```

value,	is any value or expression (formula) or reference
value_if_error	is the value you want returned in the event of an error

IFNA

Returns the value you specify if the expression returns #N/A, otherwise returns the expression.

Example: **=IFNA(VLOOKUP("Pencils", A2:B10, 2, FALSE), "")**

```
=IFNA(
    value,
    value_if_na
)
```

value,	is any value or expression (formula) or reference
value_if_na	is the value you want returned in the event of a #N/A error

XLOOKUP `2021`

Searches a range or an array for a match and returns the corresponding item from a second range or array. By default, exact match is used.

Example: **=XLOOKUP("Pencils", A2:A10, B2,B10, "Not found", 0, 1)**

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

    [match_mode],

    [search_mode]
)
```

lookup_value,	is the value to search for
lookup_array,	is the array or range to search
return_array,	is the array or range to return
[if_not_found],	returned if no match is found
[match_mode],	0 - exact match (default) -1 - exact match or next smaller item 1 - exact match or next larger item 2 - wildcard character match
[search_mode]	1 - search first to last (default) -1 - search last to first 2 - binary search (sorted ascending order) -2 - binary search (sorted descending order)

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FUNCTION	SYNTAX [OPTIONAL]	DESCRIPTION

VLOOKUP

Example: =VLOOKUP("Pencils", A2:B10, 2, FALSE)

Looks for a value in the leftmost column of a table and then returns a value in the same row from a column that you specify. By default, the table must be sorted in ascending order.

=VLOOKUP(	
lookup_value,	is the value to search for in the first column of the table
table_array,	is a table in which the data is retrieved
col_index_num,	is the column number in the table_array that the matching value should be returned
[range_lookup]	FALSE or 0 returns an exact match, TRUE or 1 returns an approximate match
)	

INDEX

Example: =INDEX(A2:B10, 3, 2)

Returns a value or reference of the cell at the intersection of the specified row and column.

=INDEX(	
array,	is a range of cells of an array constant
row_num,	selects the row in Array from which to return a value
[column_num]	selects the column in Array from which to return a value
)	*Tip*: 0 in the row or column arguments returns the whole row/column.

MATCH

Example: =MATCH("Pencils", A2:A10, 0)

Returns the relative position of an item in an array that matches a specified value in a specific order.

=MATCH(	*Tip*: Excel 2021 users should use the new XMATCH function.
lookup_value,	is the value you want to find in the lookup_array
lookup_array,	is a contiguous range of cells or array containing possible lookup values
[match_type]	1 - next smaller 0 - exact match -1 - next larger
)	

INDEX & MATCH

Example: =INDEX(A2:D10, MATCH("Pencils", A2:A10, 0), MATCH("South", A1:D1, 0))

Returns a value or reference of the cell at the intersection of the specified row and column, where MATCH is used to find the row/column.

=INDEX(	
array,	is a range of cells of an array constant
MATCH(	row number to return is found using MATCH (optional)
lookup_value,	is the value you want to find in the lookup_array
lookup_array,	is a contiguous range of cells or array containing possible lookup values
[match_type]),	1 - next smaller 0 - exact match -1 - next larger
MATCH(	column number to return is found using MATCH (optional)
lookup_value,	is the value you want to find in the lookup_array
lookup_array,	is a contiguous range of cells or array containing possible lookup values
[match_type])	1 - next smaller 0 - exact match -1 - next larger
)	

FILTER [2021]

Example: =FILTER(A2:D10, A2:A10="Pencils", "Not found")

Returns a filtered range or array based on logical test criteria.

=FILTER(	
array,	the range or array to filter
include,	an array of Booleans (logical tests) where TRUE represents a row or column to retain
[if_empty]	value or text you want returned if no items are retained
)	

FUNCTION	SYNTAX [OPTIONAL]	DESCRIPTION

UNIQUE `2021`

Returns the unique values from a range or array.

Example: **=UNIQUE(A2:A100, FALSE, FALSE)**

=UNIQUE(
- array, — the range or array from which to return unique rows or columns
- [by_col], — compare rows against each other = FALSE or omitted, compare columns = TRUE
- [exactly_once] — return rows/columns that occur exactly once = TRUE, return all distinct rows/columns = FALSE
)

SORT `2021`

Sorts a range or array.

Example: **=SORT(A2:C100, 2, -1, FALSE)**

=SORT(
- array, — the range or array to sort
- [sort_index], — a number indicating the row or column to sort by
- [sort_order], — a number indicating the desired sort order: 1 - ascending, -1 - descending
- [by_col] — FALSE - sort by row (default), TRUE - sort by column
)

EOMONTH

Returns the date of the last day of the month before or after a specified number of months.

Example: **=EOMONTH("3/1/2023", 1)**

=EOMONTH(
- start_date, — is a date in the form of a date serial number that represents the start date
- months — is the number of months before (negative number) or after (positive number) the start date. e.g. 1 returns the next month end date, 0 returns the current month end date, -1 returns the previous month end date.
)

EDATE

Returns the date that is a number of months before or after the start date.

Example: **=EDATE("1/1/2023", 3)**

=EDATE(
- start_date, — is a date in the form of a date serial number that represents the start date
- months — is the number of months before or after start_date
)

NETWORKDAYS.INTL

Returns the number of whole workdays between two dates with custom weekend parameters.

Example: **=NETWORKDAYS.INTL("1/1/2023", "1/1/2024", 1, "25/12/2023")**

=NETWORKDAYS.INTL(
- start_date, — is a date in the form of a date serial number that represents the start date
- end_date, — is a date in the form of a date serial number that represents the end date
- [weekend], — is a number or string specifying when weekends occur e.g. 1 Saturday & Sunday, 2 Sunday & Monday etc.
- [holidays] — is a list of dates to exclude from the working calendar
- *Tip: weekend can also be represented with 1s and 0s where 1 is a workday and 0 is a weekend e.g. "1111100"*
)

SUMIFS `2013`

Adds the cells specified by a given set of conditions or criteria.

Example: **=SUMIFS(C2:C100, A2:A100, "South", B2:B100, "Finance")**

=SUMIFS(
- sum_range, — are the actual cells to sum
- criteria_range1, — is the range of cells you want evaluated for a particular condition
- criteria1, — is the condition or criteria in the form of a number, expression or text
- ...) — *Tip: also try AVERAGEIFS, MAXIFS, MINIFS*

FUNCTION	SYNTAX [OPTIONAL]	DESCRIPTION
SEQUENCE `2021`	**Example:**	**=SEQUENCE(4, 5, 1, 5)**
Returns a sequence of numbers.	=SEQUENCE(	
	rows,	the number of rows to return
	[columns],	the number of columns to return
	[start],	the first number in the sequence
	[step]	the amount to increment each subsequent value in the sequence
	)	

FUNCTION	SYNTAX [OPTIONAL]	DESCRIPTION
GETPIVOTDATA	**Example:**	**=GETPIVOTDATA("Sales", A3, "Region", "South")**
Extracts data stored in a PivotTable and automatically adapts to changes in the PivotTable size/shape.	=GETPIVOTDATA(	
	data_field,	is the name of the data field to extract data from.
	pivot_table,	the location of the PivotTable. Typically the top left PivotTable cell
	[field1,	field to refer to
	[item1],	item to refer to
	...)	