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The focus this week was on using Excel's logical and lookup functions to manipulate values categorise data and match data sets. This handy quick reference guide includes all functions we looked at, a list of logical operators and some other functions worth investigating.

LOGICAL AND LOOKUP FUNCTIONS

Function	Description
IF(logical_test, value_if_true, [value_if_false])	Return different values depending on a test.
AND(logical1, [logical2], ...)	Combine several tests. Will return true only if **all** the tests are true.
OR(logical1, [logical2], ...)	Combine several tests. Will return true if **any** of the tests are true.
VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])	Look up a value in a range of cells. Return the value in the same row but a different column.
INDEX(array, row_num, [column_num])	Returns the value from the array given by position row_num and column_num. Often used with **MATCH** to find the row and column positions.
MATCH(lookup_value, lookup_array, [match_type])	Look up a value in an array. Returns the position of the value in the array.

XLOOKUP

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

XLOOKUP is the newest lookup function in Excel. It only became available in the Office 365 version of Excel in early 2020. It combines the ease-of-use of **VLOOKUP** with the power of **INDEX/MATCH**. One limitation of **VLOOKUP** is that it can only look up values in the leftmost column of the array. With **XLOOKUP** you specify the lookup array and return arrays separately.

There is also a new **XMATCH** function that expands on the **MATCH** function.

LOOKUP TIPS

- Name lookup ranges
- Convert lookup data to tables
- Specify if it is a **Range** lookup or **Exact Match**
- Keep formulas as simple as possible

LOGICAL OPERATORS

=	Equal to
<	Less than
<=	Less than or equal
>	Greater than
>=	Greater or equal
<>	Not equal

BONUS CONTENT

IFS — The **IF** function only allows 1 logical test. We have seen how we can nest **IF**s if you need to perform multiple tests, which can get messy with several tests. Another option is the **IFS** function, introduced in recent versions of Excel. It can perform multiple tests, returning the value associated with the first test that returns true.

IFERROR/IFNA — sometimes you want to perform a calculation that might produce an error. Using these functions, you can return a specified value if your calculation produces an error. **IFERROR** traps all errors, **IFNA** only traps a **#N/A** error.