Excel Lookup Formulas Notes (Updated with HLOOKUP)

XLOOKUP

Definition: XLOOKUP is a modern replacement for VLOOKUP and HLOOKUP. It searches a range or array for a match and returns a corresponding item.
Syntax: XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])
Example: Example: =XLOOKUP(105, A2:A10, B2:B10, "Not Found")
Tips: Supports exact match by default, can search from first-to-last or last-to-first, and allows returning entire arrays.
Use Case: Flexible lookups without the left-column restriction of VLOOKUP.

XLOOKUP Multiple Rows

Definition: XLOOKUP can return multiple columns (spill results) when the return array has more than one column.
Syntax: XLOOKUP(lookup_value, lookup_array, return_array)
Example: Example: =XLOOKUP(105, A2:A10, B2:D10) → returns multiple values (columns B to D).
Tips: Ensure dynamic arrays are supported (Excel 365/2021).
Use Case: Retrieve entire rows of information for a single lookup value.

XLOOKUP Exact Match

Definition: XLOOKUP defaults to exact match, unlike VLOOKUP which defaults to approximate match.
Syntax: XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], 0)
Example: Example: =XLOOKUP("HR", A2:A10, B2:B10, "Not Found", 0)
Tips: Match mode 0 = exact match, -1 = exact or next smaller, 1 = exact or next larger, 2 = wildcard match.
Use Case: Ensures precise lookups for IDs, codes, or exact text.

XLOOKUP Search Order

Definition: Search order determines whether Excel looks from first-to-last or last-to-first.
Syntax: XLOOKUP(lookup_value, lookup_array, return_array, , , search_mode)
Example: Example: =XLOOKUP(50, A2:A10, B2:B10, "Not Found", 0, -1) → searches bottom-to-top.
Tips: Search_mode 1 = first-to-last (default), -1 = last-to-first.
Use Case: Find the last occurrence of a value (e.g., last transaction by customer).

XLOOKUP Horizontal

Definition: XLOOKUP can perform horizontal lookups, replacing HLOOKUP.
Syntax: XLOOKUP(lookup_value, lookup_array, return_array)
Example: Example: =XLOOKUP("Q2", B1:E1, B2:E2) → finds Q2 sales.
Tips: No need for separate HLOOKUP; one formula handles both vertical and horizontal lookups.
Use Case: Looking up data across columns, like quarters, months, or categories.

XLOOKUP with SUM

Definition: XLOOKUP results can be wrapped inside SUM to aggregate values.
Syntax: SUM(XLOOKUP(lookup_value, lookup_array, return_array))
Example: Example: =SUM(XLOOKUP("HR", A2:A10, C2:E10)) → sums all matching row values.
Tips: Return array must be numeric if using SUM.
Use Case: Quickly calculate totals for matched records.

VLOOKUP

Definition: VLOOKUP searches vertically for a value in the first column of a range and returns a value in the same row from another column.
Syntax: VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])
Example: Example: =VLOOKUP(105, A2:C10, 2, FALSE)
Tips: Table must have the lookup column on the left. Default is approximate match unless FALSE is specified.
Use Case: Legacy lookups still common in older spreadsheets.

HLOOKUP

Definition: HLOOKUP searches horizontally for a value in the top row of a table and returns a value in the same column from another row.
Syntax: HLOOKUP(lookup_value, table_array, row_index_num, [range_lookup])
Example: Example: =HLOOKUP("Q2", A1:E2, 2, FALSE) → finds Q2 in first row and returns value from second row.
Tips: Top row must contain the lookup value. Default is approximate match unless FALSE is specified.
Use Case: Useful for looking up values across a header row, such as months or quarters.

XLOOKUP vs VLOOKUP vs HLOOKUP

VLOOKUP: Searches vertically; requires lookup value in the first column; cannot look left.
HLOOKUP: Searches horizontally; requires lookup value in the first row; limited flexibility.
XLOOKUP: Replaces both; allows vertical or horizontal lookup, returns arrays, supports defaults, exact match by default, and reverse search.

Key Differences:
- XLOOKUP can return results from left/right; VLOOKUP only to the right.
- XLOOKUP defaults to exact match; VLOOKUP/HLOOKUP default to approximate match.
- XLOOKUP can handle missing values gracefully with [if_not_found].
- XLOOKUP eliminates the need for HLOOKUP entirely.