VLOOKUP

Understanding VLOOKUP in Excel

The **VLOOKUP** function in Excel is a powerful tool used to find data in a table or a range by searching for a value in the first column. The "V" in VLOOKUP stands for "vertical," because it searches down the first column of your table to find the value you specify.

Think of it like this: You have a large list of employees with their names, IDs, departments, and salaries. If you only have an employee's ID number and you need to quickly find their salary, you would use VLOOKUP.

How VLOOKUP Works

The basic syntax for VLOOKUP is:

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

Let's break down each of these arguments:

1. **lookup_value**: This is the value you want to find. In our example, this would be the employee ID number.
2. **table_array**: This is the range of cells where the data is located. It should include both the column you're searching in and the column that contains the data you want to retrieve.
3. **col_index_num**: This is the column number in the table_array that contains the value you want to return. The first column in your table_array is always 1, the second is 2, and so on. If the employee salaries are in the fourth column of your table, you would enter 4 here.
4. **[range_lookup]**: This is an optional argument that determines whether you want an exact match or an approximate match.
    - **TRUE** or **1**: Finds an approximate match. This is useful for things like finding a tax bracket based on a salary range.
    - **FALSE** or **0**: Finds an **exact match**. This is the most common use of VLOOKUP. You should almost always use FALSE unless you have a specific reason to find an approximate match.

A Simple Example

Let's say you have the following data in a spreadsheet:

A	B	C	D
ID	**Name**	**Department**	**Salary**
101	John Doe	Sales	50,000
102	Jane Smith	Marketing	60,000
103	Peter Jones	HR	55,000
104	Mary White	Sales	52,000

You want to find the salary for the employee with ID **102**.

In a new cell, you would enter the following formula:

=VLOOKUP(102, A2:D5, 4, FALSE)

Here's what this formula does:

- **102**: This is our lookup_value. We are searching for this ID.
- **A2:D5**: This is our table_array. It's the entire data table.
- **4**: This is the col_index_num. The "Salary" column is the 4th column in our table.
- **FALSE**: We want an exact match for the ID.

After pressing Enter, the formula will return **60,000**, which is Jane Smith's salary.

Important Things to Remember

- **First Column Rule**: VLOOKUP can only search in the **first column** of your table_array. If the data you're looking for isn't in the first column, VLOOKUP won't work. For example, you can't use VLOOKUP to search for a "Name" and return an "ID".
- **Case Insensitive**: VLOOKUP is not case-sensitive. "John" and "john" are treated as the same.

- **Alternative Functions**: While VLOOKUP is widely used, newer and more flexible functions like **INDEX** with **MATCH** or **XLOOKUP** (available in newer versions of Excel) are often better alternatives because they don't have the "first column" limitation.

HLOOKUP

Understanding HLOOKUP in Excel

The **HLOOKUP** function in Excel is used to search for a value in the **top row** of a data table and return a corresponding value from a specified row in the same column. The "H" in HLOOKUP stands for "horizontal," because it searches across a row instead of down a column.

HLOOKUP is useful when your data is arranged horizontally, with headers in the first row and related data in the rows below.

HLOOKUP Syntax

The basic formula for HLOOKUP is:

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

Let's break down each argument:

- **lookup_value**: The value you want to find. It can be a number, text, or a cell reference. HLOOKUP will search for this value in the top row of your table.
- **table_array**: The range of cells that contains your data. The first row of this range must contain the values you are searching for.
- **row_index_num**: The row number within the table_array that contains the value you want to retrieve. The top row of your table_array is considered 1, the next row is 2, and so on.
- **[range_lookup]**: An optional argument that specifies whether you need an exact or approximate match.
    - **FALSE** (or 0): This is for an **exact match**. HLOOKUP will only return a value if it finds an exact match for the lookup_value. This is the most common setting.
    - **TRUE** (or 1): This is for an **approximate match**. It's used when you want to find the closest value, which is helpful for things like finding a tax rate based

on an income range. For this to work correctly, the top row of your data must be sorted in ascending order.

A Simple Example

Imagine you have a table showing quarterly sales for different regions:

	Q1	**Q2**	**Q3**	**Q4**
North	$100	$150	$120	$180
South	$90	$110	$140	$160
East	$120	$130	$150	$170

You want to find the sales for the **North** region in **Q3**.

The formula would be:

=HLOOKUP("Q3", B1:E4, 2, FALSE)

Here's why:

- **"Q3"**: This is the lookup_value. We are searching for "Q3" in the first row.
- **B1:E4**: This is the table_array, which includes all the data.
- **2**: This is the row_index_num. The sales for the "North" region are in the second row of the table array.
- **FALSE**: We need an exact match for "Q3".

The formula will return **$120**.

HLOOKUP vs. VLOOKUP

The main difference between HLOOKUP and VLOOKUP is the direction of the search.

- **HLOOKUP** searches **horizontally** across the top row of a table.
- **VLOOKUP** searches **vertically** down the first column of a table.

Because most datasets are organized vertically, VLOOKUP is generally used more often than HLOOKUP.

You can learn more about how HLOOKUP works with this video: How to Use HLOOKUP in Excel.