# Excel Practice Notes: VLOOKUP, COUNTIF, SUMIF, IF, Absolute/Mixed References ($), Conditional Formatting, PivotTables, Data Validation, Multilevel Sorting

**Goal:** Build working knowledge of eight core Excel skills used in data/RCM workflows and practice them with the attached workbook.

## VLOOKUP

* Purpose: Look up a value in the leftmost column of a table and return a value in the same row from another column.
* Syntax: =VLOOKUP(lookup\_value, table\_array, col\_index\_num, [range\_lookup])
* Key arguments:
* lookup\_value — the value to find (e.g., an ID).
* table\_array — the table (absolute reference recommended, e.g., $A$2:$E$100).
* col\_index\_num — which column number to return from within table\_array (1 is leftmost).
* [range\_lookup] — FALSE for exact match (recommended for IDs), TRUE for approximate (sorted by leftmost column).
* Common pitfalls:
* Lookup value not in the leftmost column → VLOOKUP won’t work. Use XLOOKUP/INDEX-MATCH alternative if needed.
* Forgetting to lock the table range with $ → formulas break when filled down.
* Using TRUE (approximate) when data are not sorted → wrong answers.
* Practice tie-in:
* Use the Products table (sheet: 'VLOOKUP'). Enter IDs and pull Product Name, Category, or Price.

## COUNTIF & SUMIF

* Purpose: COUNTIF counts how many cells meet one condition; SUMIF sums numbers that meet one condition.
* Syntax: =COUNTIF(range, criteria) and =SUMIF(range, criteria, [sum\_range])
* Criteria tips:
* Text criteria in quotes: "East", "John".
* Comparisons: ">10", "<=100", "<>Cancelled".
* Use cell references for dynamic criteria: ">" & F2.
* Common pitfalls:
* Mismatched range sizes between range and sum\_range in SUMIF.
* Leading/trailing spaces causing counts to miss. Use TRIM/CLEAN or data cleaning.
* Practice tie-in:
* On 'COUNTIF\_SUMIF', count orders by Region/Product, and sum Amount by Salesperson/Region.

## IF

* Purpose: Return one value if a condition is TRUE and another if FALSE.
* Syntax: =IF(logical\_test, value\_if\_true, value\_if\_false)
* Patterns:
* Nested IFs for multiple bands (e.g., grading).
* Combine with AND/OR: =IF(AND(A2>0,B2="Paid"),"Post","Hold").
* Use with ISBLANK/ISNUMBER to handle missing/invalid data.
* Practice tie-in:
* On 'IF\_Refs', build grades, shipping fee logic, and posting rules.

## Absolute & Mixed References ($A$1, A$1, $A1)

* Purpose:
* Control how cell references behave when you copy formulas.
* Types:
* $A$1 — row & column locked (absolute)
* A$1 — row locked, column relative (mixed)
* $A1 — column locked, row relative (mixed)
* A1 — both relative
* Tip:
* Press F4 (Fn+F4 on some laptops) to cycle reference styles in the formula bar.
* Practice tie-in:
* On 'IF\_Refs', multiply Prices by a fixed Tax Rate in a single cell; copy down with $ to keep the Tax Rate fixed.

## Conditional Formatting

* Purpose: Format cells dynamically based on rules.
* Useful rules:
* Highlight Cells (greater/less than, between, equal to, text contains).
* Top/Bottom rules (Top 10, Above/Below Average).
* Data Bars, Color Scales, Icon Sets.
* Duplicates, Date Occurring (this month, last week, etc.).
* Use a formula to determine which cells to format (powerful for custom rules).
* Practice tie-in:
* On 'Conditional\_Formatting', highlight high-value orders, overdue dates, and duplicates.

## PivotTables

* Purpose: Summarize large tables quickly without writing formulas.
* Workflow:
* Select any cell in the dataset → Insert → PivotTable → choose table/range and destination.
* Drag fields into Rows/Columns/Values/Filters.
* Change aggregation (Sum, Count, Average) via Value Field Settings.
* Group by dates or numbers; add slicers for quick filtering.
* Practice tie-in:
* On 'Transactions' data (sheet: 'Pivot\_Source'), build pivots (e.g., Sales by Region by Product; Top Salesperson).

## Data Validation

* Purpose: Control what users can type in cells to prevent errors.
* Common rules:
* List (dropdown from a range), Whole number/Decimal (min–max), Date (between), Text length, Custom formula.
* Error Alerts and Input Messages guide users.
* Practice tie-in:
* On 'Data\_Validation', create dropdowns for Region/Product, bounds for Units, a date window, and a simple email pattern check.

## Multilevel Sorting

* Purpose: Sort by multiple keys (e.g., Department A→Z, then Salary Z→A, then Name A→Z).
* Steps:
* Home → Sort & Filter → Custom Sort…
* Add Level for each field and choose order for each level.
* Practice tie-in:
* On 'Sorting', sort by Department (A→Z), then Salary (Largest→Smallest), then Name (A→Z).

## How to Use the Practice Workbook (Step-by-Step)

1. Open the workbook 'Excel\_Practice.xlsx'. Start on the 'ReadMe' sheet.
2. Follow the tasks sheet-by-sheet. Blue cells are where you should type formulas/settings. Light gray cells show expected structure/notes.
3. After attempting, check the 'Solutions' sheet to compare formulas and answers.
4. Repeat by clearing only your input cells if you want to practice again.