# Section 4: Microsoft Excel – Best Practices That Will Make a Difference

## Lesson 4-36: Using Custom-Sort to Sort Multiple Columns Within a Table

To use custom sort, we select all of the data within the table and then select

**Home > Sort & Filter > Custom Sort**

## Lesson 4-37: Saving Time in Excel and Doing Everything Faster with Excel Shortcuts

**ALT + A + T** – Adds or removes filters.

We can add functions to the **Quick Access Toolbar** by going into the **Options Menu** > **Quick Access Toolbar**

Pressing **ALT** will display shortcut keys in Excel.

## Lesson 4-38: Multiply by 1

**3,0** is interpreted as **text**.

We can find numbers that are interpreted as text by multiplying them by **1**.

This will allow us to easily correct type errors.

* #VALUE!

## Lesson 4-39: Find and Replace – References

To use **Find & Replace** select **Home > Find & Select > Replace.**

* This opens the Replace section of Find & Replace

We can access advances options by selecting **Options.**

* This will allow use to search just the current sheet or the entire workbook.

If you highlight two or more cells, Find & Replace will be used only the selected cells.

If you highlight only a single cell, the Find & Replace will be used on the entire sheet.

To **Find** a sequence of characters in the sheet we can use shortcut **CTRL + F**.

To **Replace** a sequence of characters in the sheet we can use shortcut **CTRL + H**.

* If we enable the **Match entire cell contents** option, then Replace will only replace exact matches.

We can use Replace to remove external sheet references in Excel.

* We usually do this when we import data from a previous version of the current workbook into it.

## Lesson 4-41: Find and Replace: Formatting

We can replace **formatting** as well using Find & Replace.

We first open the Replace section of the Find & Replace menu.

Then we select **Format > Choose Format from Cells**

The formatted cells that much the format and number of cells selected will replaced.

* The text is ignored when finding and replacing formatting.

## Lesson 4-42 – Green References

Green triangles in a cell indicate a potential error/warning.

This is caused by Excel’s **Background Error Checking**

To disable this we go into the Options Menu and de-select

**Options > Formulas > Enable Background Error Checking**

We do this is as the green triangle make’s our spreadsheets look unprofessional.

## Lesson 4-43: Beauty Saving: The Professional Way of Saving Files

Excel automatically “remembers” the last position/cell a file was saved in.

To save files professionally we use **Beauty Saving.**

* This means saving all sheets of a workbook at cell **A1**.

P.S. – Perhaps a Macro can be created for this in the future for personal use.

## Lesson 4-44: The Power of F2

**F2** allows you to edit formulas without using your mouse.

* Automatically opens formula bar in edit mode.
* Also highlights inputs to the formula that are the in the current worksheet.

## Lesson 4-45: Conditional Formatting

**Conditional formatting** is used to communicate trends in data and also focus the attentions of the reader to important values.

This is done via **data bars, color scales, or icon sets**.

To compare **numbers** using conditional formatting we use the **Number** type

If we want to compare **percentiles** for a range of values we use the **Percent** type.

# Section 5: Excel – Beginner, Intermediate, and Advanced Functions

## Lesson 5-46: Key Excel Functions: IF

**IF** checks condition and returns a value if true or other value if false

Syntax: **IF(condition, value\_if\_true, value\_if\_false)**

## Lesson 5-47: Enlarge the Formula Bar

We can **enlarge** the **formula bar** by selecting the **drop-down** arrow next to the formula bar and also by **dragging** the formula area down.

* Either will work.

## Lesson 5-48: IF, SUMIF, SUMIFS

**SUM** sums the values within a given cell range.

Syntax: **SUM(range)**

**SUMIF** checks if criteria is met in a range of cells and sums values in another range where the corresponding range cell met the criteria.

Syntax: **SUMIF(criteria\_range, criteria, sum\_range)**

**SUMIFS** sums the values in the range where the corresponding criteria ranges all meet their criterion.

Syntax: **SUMIFS(sum\_range, sum\_criteria, criteria [,sum\_criteria2, criteria2…])**

Note: The **criteria** for SUMIF and SUMIFS is a string.

## Lesson 5-5: COUNT, COUNTA, COUNTIF, COUNTIFS

**COUNT** counts the number of cells in a range that contain numbers

* It does not count cells that are blank or that contain numbers.

Syntax: **COUNT(range)**

Note: We can start a formula by writing **=**, **+**, or **–**

* If we start with **+**, this is the same as starting with =
* If start with **–** and we type a number next to it, then it will be negated.
  + E.g. - - 9 will be interpreted as =- -9, or = 9

**COUNTA** (pronounced count-uh) counts all cells in a range containing Text, Numbers, Dates, Booleans, Errors, Formula

* It excludes blank cells.
  + Cells that contain formula equaling an empty string ARE counted, however.

Syntax**: COUNTA(range)**

Note: The **criteria** for COUNTIF is a string.

* Extra notes: The **criteria** for **IF** is NOT a string.

**COUNTIF** counts the rows that where the criteria range meets the criteria

Sytnax: **COUNTIF(criteria\_range1, criteria1)**

**COUNTIFS** counts the rows where the criteria ranges **both** meet the criterion.

Syntax: **COUNTIF(criteria\_range1, criteria1, [criteria\_range2, criteria2], …)**

P.S. So, basically COUNTIFS can have the same syntax as COUNTIF and be used interchangeably from COUNTIF

**NOTE: COUNTIF** and **COUNTIFS** can both count text

**NOTE: “<>”** criteria means countcells that are not empty

* Formula returning the empty string is considered not empty.

## Lesson 5-48: AVERAGE, AVERAGEIF, AVERAGEIFS

**AVERAGE** averages the values within a given cell range.

Syntax: **AVERAGE(range)**

**AVERAGEIF** checks if criteria is met in a range of cells and averages values in another range where the corresponding criteria range cell met the criteria.

Syntax: **AVERAGEIF(criteria\_range, criteria, average\_range)**

**AVERAGEIFS** sums the values in the range where the corresponding criteria ranges all meet their criterion.

Syntax: **AVERAGEIFS(average\_range, criteria\_range, criteria [,criteria\_range2, criteria2…])**

Note: The **criteria** for AVERAGE and AVERAGEIF is a string.

## Lesson 5- 52: Key Excel Functions LEFT, RIGHT, MID, UPPER, LOWER

**LEFT** extracts the specified numbers of characters to the left of a string.

Syntax: **LEFT(text, num\_chars)**

**RIGHT** extracts the specified numbers of characters to the right of a string.

Syntax: **RIGHT(text, num\_chars)**

**MID** extracts the specified numbers of characters starting at the specified position of a string.

Syntax: **MID(text, start\_position, num\_chars)**

**UPPER** writes words in uppercase

Syntax: **UPPER(text)**

**LOWER** writes text in lowercase.

Syntax: **LOWER(text)**

**PROPER** writes text with each letter of the first word capitalized.

Syntax: **PROPER(text)**

**CONCATENATE/CONCAT** and **&** concatenate different strings together.

* CONCAT is the same as CONCATENATE **except** it can concatenate a range of strings

Syntax: **CONCATENATE/CONCAT(text1 [,text2]…)**

Syntax: “Rick” & “ “ & “James”

## 5-54: Find the Highest and Lowest Values in a Range MAX & MIN

**MAX** returns the largest value in a list of numbers.

Syntax: **MAX(num1 [, num2]…)**

**MIN** returns the smallest value in a list of numbers.

Syntax: **MIN(num1 [, num2]…)**

## 5-55: = and + are Interchangeable When You Start Typing a Formula

## 5-56: Use ROUND in Your Financial Models

**ROUND** rounds a number to a specified number of digits after a decimal point

Syntax: **ROUND(number, num\_digits)**

* If the number of digits you round to is equal to the number of decimal places, then the function will return the same number.

Note: ROUND does not follow scientific rounding.

## 5-57: Excel's Lookup Functions VLOOKUP & HLOOKUP Made Easy

**VLOOKUP** (or vertical lookup) is used to look up a value in a table based on a lookup value in a column.

Syntax: **VLOOKUP(lookup\_value, table\_array, col\_index, range\_lookup)**

**HLOOKUP** (or vertical lookup) is used to look up a value in a table based on a lookup value in a row.

Syntax: **HLOOKUP(lookup\_value, table\_array, row\_index, range\_lookup)**

**range\_lookup**’s default value is TRUE and looks for an approximate match.

* If TRUE (default value), the row/column must be sorted in ascending order.
* If FALSE, it will look for an exact match and order does not matter.

Which one you use depends on how the table you are searching is pivoted.

If the search criteria is in the column group, you use HLOOKUP

If the search criteria is in the row group, you use VLOOKUP

## 5-58: INDEX, MATCH, and Their Combination - The Perfect Substitute of VLOOKUP

The **INDEX** function returns the value in a table array located in the specified coordinates.

Syntax: **INDEX(table\_array, row\_num [, col\_num])**

The **MATCH** function finds the index of a value in a row or column

Syntax: **MATCH( lookup\_value, lookup\_array [,match\_type])**

* **0** – exact match
* **1** – Less than, finds the nearest value less than or equal to the lookup value
* **-1** – Greater than, finds the nearest value less than or equal to the lookup value

**INDEX(MATCH)**

Is used as a replacement for VLOOKUP and HLOOKUP because the index column and index row can be behind or in front of the lookup column.

So if we cut and past the look up column or row to the front or back or top or bottom, the out put of index/match will stay the same.

**NOTE:** Excel treats cutting and pasting cells as moving the cells, so if do this formulas that use these cells will update even if they are using absolute references to the moved cells.

**NOTE:** In XLOOKUP, the lookup array and return array have to be the same shape (either both row or column arrays), while in INDEX-MATCHthe lookup array and return array don’t have to be the same shape, one array can be a row and the other array can be a column.

## Lesson 5-59: XLOOKUP

**XLOOKUP** is used to lookup values either vertically or horizontally.

Syntax: **XLOOKUP(lookup\_value, lookup\_array, return\_array)**

**Note:** the default match type is **EXACT** match for XLOOKUP.

**NOTE:** In XLOOKUP, the lookup array and return array have to be the same shape (either both row or column arrays), while in INDEX-MATCHthe lookup array and return array don’t have to be the same shape, one array can be a row and the other array can be a column.

## Lesson 5- 60: Using Excel's IFERROR Function to Trap Spreadsheet Errors

**IFERROR** returns a replacement expression for another expression if it results in an error.

Syntax: **IFERROR**(**expression, replacement\_expression)**

## Lesson 5- 61: A Useful Tool for Financial Analysis - The RANK Function

**RANK** is used to assign ranks to an array list (can be vertical or horizontal).

* If there are ties values get the same rank, but ranks are skipped for subsequent values.

Syntax: **RANK(number, ref\_list [,order])**

* The default ranking order is **descending**, meaning higher values get better ranks.
  + E.g. In a list ranging from 1-100, 100 would be 1.

**RANK.EQ** has replaced RANK in EXCEL 2010 and above. Has the same function as RANK, but is recommended by Microsoft for its clear naming convention.

## Lesson 5- 62: Create Flexible Financial Models with CHOOSE

The **CHOOSE** function selects the number in specified position from a list of numbers.

Syntax: **CHOOSE(position, number\_position1 [, number\_position2, number\_position3]…)**

Can be used when you want to change a value that is display in a cell dynamically if the **position** parameter is a referenced cell in **CHOOSE** that can changed dynamically in the spreadsheet.

**Sensitivity Analysis** in finance the practice of evaluating how changes in an independent variable or variables affect the output of a dependent variable.

* Also known as **What-If Analysis** or **Simulation Analysis**.
* Used in financial modeling to determine/predict outcomes when different assumptions are applied.
* Done using the **What-If Analysis** feature in Excel
  + **Goal Seek**
  + **Data Tables**

## Lesson 5- 63. Goal Seek Will Help You Find the Result You Are Looking For

**Goal Seek** is a **What-if-Analysis** feature in Excel.

Goal Seek allows you to evaluate what input is needed in a formula to get the result you want.

* The feature asks you what your desired value is in a particular cell and then asks you to pick a related cell to change in order to get that value.
  + The cell must be related or the feature will not work

Goal Seek useful when dealing with complicated formulas.

To access Goal Seek, go to:

**Data > What-If-Analysis > Goal Seek**

So Overall Goal Seek can be said to be used to find a missing unknown value in order to get a desired value.

## 5-64. Perform Sensitivity Analysis with Excel's Data Tables

**Data tables** allow you to perform **Sensitivity Analysis**. They allow you see the outcome of a formula for different values of at most two of (independent) variables/parameters.

**Data > What-If-Analysis > Data Tables**