PRACTICAL EXCEL
REFERENCE SHEET

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ESSENTIAL SHORTCUT KEYS

- Copy: **Ctrl+C** . Paste: **Ctrl +V** Undo: **Ctrl+Z** Cut: **Ctrl+X**
- Save: **Ctrl + S** Open: **Ctrl + O** Find Data: **Ctrl + F** Replace it: **Ctrl +H**
- To select a continuous Column/Row: **Ctrl+ Shift + [Arrow keys]**
- To select last cell in Contiguous Range: **Ctrl + [Arrow keys]**
- To select all cells in the current range: **Ctrl +A.**
- To edit a cell: Press the F2 function key or double click in the cell
- To delete rows or columns: **Select them, Press Ctrl + -**
- To select visible cells in a filtered range: **Alt + ; (semi colon)**
- To hide a column/row(s): **Ctrl + 0 (zero) , Ctrl + 9**
- To start a new line in a cell: **Alt + Enter**
- To insert a new column: **Select right column, Ctrl + Shift + "+"**
- To expand or collapse the ribb **Ctrl+F1**
- To switch to formula view: **Ctrl+Grave accent (`)**
- To clear content & formats from cells: **Home > Clear > Clear All**
- To swap data from rows to columns : **Home > Paste > Transpose**
- To remove all formats from cells: **Home > Clear > Clear Formats**
- To sum numbers in a contiguous range: **Alt =**
- To see which cells are directly referenced by that formula: **Ctrl [**
- To format values with the $ symbol: **Select cells , Ctrl - Shift - $**

EXCEL SYNTAX

- To make A1 a full absolute reference to cell A1: **$A$1**.
- To lock rows when copying down: **A$1 Partial reference.**
- A cell reference full worksheet address: **=SheetName'!CellReference**
- A cell reference full workbook address : **=[Sourceworkbook.xlsx]Sheetname !CellReference**
- Wildcard characters: **asterisk (*) - represents any sequence of characters. A question mark (?) - represents any single character.**
- To join text strings from different cells: **=A1& B1. With a space =A1&""&B1**
- Basic Order of Precedence:
  () parentheses ,negation (-) , percentages (%), exponentiation (^) ,Multiplication (*) and division (/), addition (+) and subtraction (-),
- To give a unique identifier to similar records in list: **=CONCATENATE(LEFT(B3,3),"-",COUN-TIF($B$3:B3,B3))**
- **Table Syntax:** Examples below based on Table called Sales , Columns : South ,North, East and West
- To add values in the South and West columns of the current row:
  =SUM(Sales[@South], Regions[@West])
- To add up the values in all the columns between South and East.
  =SUM(Sales[[South]:[East]])
- To add non-adjacent columns, use commas. So to sum the data rows in the South and West
  =SUM(Sales[South], Regions[West])
- Relative Table column reference (default): **table[column]**
  Absolute Table column reference: **table[[column]:[column]]**

- To sum a range of cells: **=SUM(range)**
- To find an average of numbers: **=AVERAGE(range).**
- To find the Kth biggest/ smallest number : **=Large(range, k) / Small(range, K)**
- To count cells that contain numbers only: **=COUNT(range)**
- To count cells that are non-empty cells: **=COUNTA(range)**
- To sum only visible cells in a filter: **=SUBTOTAL(9, ref1, [ref2],…)**
- To show a different value instead of an error: **=IFERROR(value,** value_if_error)
- To count the number of cells that meet a specific condition. **=COUNTIF(range_of_cells, criteria)**
- To add up the cells that meet a specific condition. **=SUMIF(range_of_cells, logical_condition)**
- To calculates the average of the cells that meet a specific condition. **=AVERAGE-IF(range,criteria,[average_range])**
- To extract a list of unique names from the range: **=UNIQUE(cell range)** *only Excel 365 and 2021+*

- To find a specific value and return a field from its corresponding record:
  =VLOOKUP(lookup_value, List, col_index, [true/false])
- To find a specified item in a range and return its relative row position:
  =MATCH(lookup_value, lookup_array, [match_type])
- How to use INDEX to retrieve a value?
  =INDEX(range, row_num, [column_num])
- A Lookup formula that allows for new rows and columns:
  =INDEX(A10:E411,MATCH(MAX(D10:D411),D10:D411,0),-MATCH("name",A10:E10,0))
  The MAX Function is picking out the largest value in range D10:D411, the MATCH function then dynamically find its relative row position and the other MATCH function dynamically finds the position of "name", all within the INDEX function.

	A	B	C	D	E	F
1						
2	PRODUCT	BUDGET	ACTUAL	COST	REVENUE	PRICE CHANGE
3	LAPTOP	100	60	50	=D3*C3	.02
4	IPHONE	200	100	100	=C4*D4	
5						
6				REV	=SUM(E3:E4)	

- How to calculate percentage change?
  Formula is (NewValue - OriginalValue)/OriginalValue. **=C3/B3 , Apply % format.**
- How to compare the actual to budgeted target in % terms ?
  Divide the cell with budgeted target by the cell with the actual. **=(C3-B3)/B3, apply % format.** For negative numbers use =(C3-B3)/ABS(B3)
- How to calculate a percentage of Total Amount? Divide each item's revenue by the total. **=E3/$E$6**
- How to calculate and apply a % Increase ? Multiply the original amount by 1 plus the percentage of the increase. **=D3*(1+F3)**
- How to calculate and apply a % Discount ?
  Subtract the % discount from 1 and then multiply by the original amount. **=D3*(1-F3)**
- How to calculate a Running Total?
  =SUM(C4:C$4) assuming a C4:Cx range.
- How tol round up calculation ?
  =ROUND (number, number of digits to round to)
- How to create a Markup formula?
  The formula is €Cost + €Markup = €Sell Price. If D3(product cost) and D4(Markup) , then the selling price formula **=SUM(D3:D4)**
- How to calculate percentage markup on selling price?
  Using the cell references from the above task , the formula is **=D4/D5**

- The XLOOKUP Function Syntax
  =XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode]) *only excel 365 & 2021+*
- To look up values vertically: **=XLOOKUP(F1, A2:A6, B2:B6)** Supply columns as the lookup arrays. To look up values horizontally: **=XLOOKUP(G1, B1:F1, B2:F2)** Supply rows instead of columns as the lookup arrays
- To use XLOOKUP to get last occurrence of a value: **Just change the 6th argument named "search_mode" to -1 , so it searches in reverse order from last to first value.**
  To use the XLOOKUP to return multiple columns or rows: **=XLOOKUP(F2, A2:A10, B2:D10)**
  Just supply a range, not a single column or row, for the return_array argument. So normally , the return argument would be B2:B10, instead of a range of columns,B2:D10. Excel automatically outputs the values into adjacent blank cells. To output the values vertically use **=TRANSPOSE(X-LOOKUP(G1, A2:A10, B2:D10))**
- To use XLOOKUP with multiple criteria: **=XLOOKUP(1, (criteria_range1=criteria1) * (criteria_range2=criteria2) * (…), return_array)**
  XLOOKUP can handle arrays. So the above formula works because the result of each criteria test is an array of TRUE and FALSE values. The multiplication of the arrays converts TRUE and FALSE into 1 and 0 respectively, and produces the final lookup array. As in maths, multiplying by 0 always gives zero, so in the lookup array, only the items that meet all the criteria are represented by 1. And because our lookup value is "1", Excel takes the first "1" in lookup_array (first match) and returns the value from return_array in
- To find a value at the intersection of a certain row and column:
  =XLOOKUP(lookup_value1, lookup_array1, XLOOKUP(lookup_value2, lookup_array2, data_values))
  This is called a double lookup. This formula works due to the XLOOKUP's ability to return an entire row or column. The inner function searches for its lookup value and returns a column or row of related data. That array goes to the outer function as the return_array.
- To create a Case-sensitive XLOOKUP: **=XLOOKUP(TRUE,EXACT(-lookup_value, lookup_array), return_array)**
  By default, the XLOOKUP function views lower and uppercase letters

- To highlight duplicates without 1st occurrences:
  =COUNTIF($A$2:$A2,$A2)>1 where A2 is the top-most cell of the selected range.

- To highlight cells based on the value of another cell:
  =C2> $A$2
  where the range of values a re in the C range and cell A2 is the comparing value. This formula will highlight all values in C range that are bigger then the A2 Value.

- To highlight days between two dates:
  =AND(D2>$A$2,E3<=$B$2)
  Dates are the D range and comparing dates are in A2 and B2.

- To highlight values in range 1 but not in range 2.
  =COUNTIF($B$2:$B$100,C2)=0
  The B range contains members in 2022 and range C contains members in 2023. This formula will highlight new members that joined in 2023.

- To highlighting entire rows based on duplicate values in one column ?
  =COUNTIF($A$2:$A$10, $A2)>1
  To exclude 1st occurrences use **=COUNTIF($A$2:$A2, $A2)>1**

- To highlight rows that have identical values in several columns except first occurrence?
  =COUNTIFS($A$2:$A2, $A2, $B$2:$B2, $B2)>1

- To evaluate a condition and returns one value if TRUE and another if FALSE: **=IF(condition, true_action, false_action)**

- A nested IFs template you can adapt: :
  =IF(A9<=500,3*A9,IF(A9<=1200,2.7*A9,IF(A9<=2 000,2.3*A9,2*A9)))

- To check for multiple conditions?
  =IF(AND(A2=5,A3=10),True, False)
  Using AND means both conditions must be true for the expression to be true. Using OR instead
  =OR(A2=5,A3=10) means only 1needs to be true.

- To sum values based on one or multiple conditions?
  =SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2] ...)

- To count values based on one or multiple conditions:
  =COUNTIFS(criteria_range1, criteria1, [criteria_range2, criteria2]...)

- To average values based on one or multiple conditions:
  =AVERAGEIFS(average_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)

- To add values that fall between two dates:
  =SUMIFS(B2:B10, A2:A10, "<=" &D5, A2:A10, ">="&D4)
  The B range is the values to be summed and the A range contains the dates with D4 and D5 containing the start and end dates.

- To get current date or time & date together : **=TODAY()**

- To calculate days: =Newer date - Older date
  =DAYS(end_date, start_date)

- To calculate days between today and another date:
  =TODAY() - past_date or Future_date - TODAY() .

- To calculate working days:
  =NETWORKDAYS(A2, B2) where A2 and B2 contain the dates

- To leave out holidays:
  =NETWORKDAYS(A2, B2, $CA$2:$C$3) where C2 ,C3 contain the holiday dates.

- To calculate age from date of birth:
  =(TODAY()-B2)/365 or **=DATEIF("10/10/1985",**

- To extract parts of a date:
  =YEAR(" 10/10/2018) returns 2018 . Also Month("date"), Day("date")

- To find out what day a date represents?
  =WEEKDAY("date") Returns a number from 1 to 7 . Sunday

- To view workbook on 2 windows: **Choose View" in the**

- To copy a collection of formats: **Select cell with formats, click (double click -for continuous use) on the format painter icon , then select the**

- How to hide data in a row/column : **Highlight the cells, right-click, and choose Format Cells. On the Number tab ,go to Category and select "Custom." Type three semicolons (;;;) in the** Type box.

- To copy the formula answers but not the actual formulas. **Select cells, copy , open the large paste icon , choose " Paste Values"**

- How to Freeze Headers for Scrolling? **Go to the View tab >Freeze Panes.**

- How to evaluate a large nested formula.
  Highlight each function and press the F9 Function Key.

- **####** The width of a column is not wide enough to display all the characters within that cell. Fix by expanding the column width.

- **#DIV/0!** Caused by dividing by zero. Fix by adjusting your formula so it' no longer divides by zero.

- **#N/A** Excel can't find a value your formula is referencing. Caused by extra characters, spaces or incomplete data tables.

- **#NAME?** Excel can't read or understand parts of your formula. Occurs if you misspell certain elements of your formula or if "text " has been mistaken for an named range**. " " left out.**

- **#NULL!** Appears when there's an erroneous space within your formula. Normally occurs when a space is placed where a comma or colon should be used.

- **#REF!** Occurs when your formula attempts to reference a deleted cell.

- **#VALUE!** Your formula is expecting to reference a number, but it's actually referencing characters, text or spaces.

- **#NUM!** Your formula contains invalid numeric values or you are attempting to perform an impossible calculation.