🍀 TEXT FUNCTIONS

Function	Purpose	Example / How to Use
CONCAT(text1, text2, …)	Combines text from multiple cells.	=CONCAT(A2, " ", B2) → joins first & last name.
TEXTJOIN(delimiter, ignore_empty, text1, …)	Joins text with a separator.	=TEXTJOIN(", ", TRUE, A2:A5) → joins items with commas.
LEFT(text, [num_chars])	Extracts characters from left side.	=LEFT(A2, 3) → first 3 letters of A2.
RIGHT(text, [num_chars])	Extracts characters from right side.	=RIGHT(A2, 2) → last 2 letters.
MID(text, start_num, num_chars)	Extracts text from middle.	=MID(A2, 2, 4) → 4 chars starting from 2nd letter.
LEN(text)	Counts number of characters.	=LEN(A2) → total letters in cell A2.
TRIM(text)	Removes extra spaces.	=TRIM(A2) → cleans unwanted spaces.
UPPER(text)	Converts text to UPPERCASE.	=UPPER(A2)
LOWER(text)	Converts text to lowercase.	=LOWER(A2)
PROPER(text)	Capitalizes each word.	=PROPER(A2)
REPLACE(old_text, start, num, new_text)	Replaces part of text by position.	=REPLACE(A2,1,3,"Mr.")
SUBSTITUTE(text, old_text, new_text, [instance])	Replaces specific text.	=SUBSTITUTE(A2,"Ltd","Private Ltd")

🔢 NUMBER & ROUNDING FUNCTIONS

Function	Purpose	Example / How to Use
ROUND(number, num_digits)	Rounds to nearest decimal.	=ROUND(A2,2) → 2 decimal places.
ROUNDUP(number, num_digits)	Always rounds up.	=ROUNDUP(A2,0)
ROUNDDOWN(number, num_digits)	Always rounds down.	=ROUNDDOWN(A2,0)
INT(number)	Rounds number down to integer.	=INT(12.8) → 12

Function	Purpose	Example / How to Use
TRUNC(number, [num_digits])	Removes decimals without rounding.	=TRUNC(12.89) → 12
MOD(number, divisor)	Returns remainder of division.	=MOD(10,3) → 1
ABS(number)	Gives absolute (positive) value.	=ABS(-45) → 45

📅 DATE & TIME FUNCTIONS

Function	Purpose	Example / How to Use
TODAY()	Returns current date.	=TODAY()
NOW()	Returns current date and time.	=NOW()
YEAR(date)	Extracts year.	=YEAR(A2)
MONTH(date)	Extracts month.	=MONTH(A2)
DAY(date)	Extracts day number.	=DAY(A2)
HOUR(time)	Returns hour from time.	=HOUR(A2)
MINUTE(time)	Returns minute.	=MINUTE(A2)
SECOND(time)	Returns second.	=SECOND(A2)
EDATE(start_date, months)	Adds/subtracts months.	=EDATE(A2,3) → +3 months.
EOMONTH(start_date, months)	Last day of month.	=EOMONTH(A2,0)
DATEDIF(start, end, "unit")	Finds difference (Y/M/D).	=DATEDIF(A2,B2,"Y") → years.
NETWORKDAYS(start, end)	Counts working days.	=NETWORKDAYS(A2,B2)
WEEKDAY(date)	Returns day of week (1=Sun).	=WEEKDAY(A2)

🔍 LOOKUP & REFERENCE FUNCTIONS

Function	Purpose	Example / How to Use
VLOOKUP(lookup_value, table_array, col_index, [range_lookup])	Finds value vertically.	=VLOOKUP(A2, B2:D10, 3, FALSE)
HLOOKUP(lookup_value, table_array, row_index, [range_lookup])	Finds value horizontally.	=HLOOKUP("Jan", A1:G3, 2, FALSE)
XLOOKUP(lookup_value, lookup_array, return_array)	Modern lookup (exact match).	=XLOOKUP(A2, B2:B10, C2:C10)

Function	Purpose	Example / How to Use
INDEX(array, row_num, [col_num])	Returns value by position.	=INDEX(B2:D6, 3, 2)
MATCH(lookup_value, lookup_array, [match_type])	Returns position in range.	=MATCH("John", A2:A10, 0)
OFFSET(reference, rows, cols)	Shifts cell reference.	=OFFSET(A1,2,1) → 2 rows down, 1 column right.
INDIRECT(ref_text)	Turns text into a reference.	=INDIRECT("A"&B2)
CHOOSE(index, value1, value2, …)	Picks from list.	=CHOOSE(2,"Red","Blue","Green") → Blue

🧠 LOGICAL & INFORMATION FUNCTIONS

Function	Purpose	Example / How to Use
AND(condition1, condition2, …)	Returns TRUE if all are TRUE.	=AND(A2>50, B2<100)
OR(condition1, condition2, …)	Returns TRUE if any is TRUE.	=OR(A2="HR",B2>60)
NOT(logical)	Reverses logic.	=NOT(A2="Yes")
ISNUMBER(value)	Checks if numeric.	=ISNUMBER(A2)
ISTEXT(value)	Checks if text.	=ISTEXT(A2)
ISBLANK(value)	Checks if blank.	=ISBLANK(A2)
ISERROR(value)	Checks if any error.	=ISERROR(A2/B2)
IFERROR(value, value_if_error)	Handles errors.	=IFERROR(A2/B2,"Error")
IFNA(value, value_if_na)	Handles only #N/A error.	=IFNA(VLOOKUP(A2,B2:C10,2,FALSE),"Not Found")

📊 DYNAMIC ARRAY FUNCTIONS

Function	Purpose	Example / How to Use
UNIQUE(array)	Returns unique values.	=UNIQUE(A2:A20)
FILTER(array, include)	Filters rows dynamically.	=FILTER(A2:B20, B2:B20="HR")

Function	Purpose	Example / How to Use
SORT(array, [sort_index], [order])	Sorts a range dynamically.	=SORT(A2:B20, 2, -1)
SEQUENCE(rows, [columns], [start], [step])	Creates number list.	=SEQUENCE(10,1,1,1)
RAND()	Random number 0–1.	=RAND()
RANDBETWEEN(bottom, top)	Random number in range.	=RANDBETWEEN(10,50)

🟦 **KEY EXCEL CONCEPTS**

Concept	Purpose	Example / Use
Relative Reference	Auto-adjusts when copied.	A1
Absolute Reference	Fixed reference.	A1
Mixed Reference	Fix row or column.	A$1 or $A1
Data Validation	Restrict cell inputs.	Drop-down list of departments.
Conditional Formatting	Highlight based on rule.	Highlight values >100.
Named Ranges	Assign a name to a cell range.	Use =SUM(SalesData)
Pivot Table	Summarize data dynamically.	Analyze sales by region.
Flash Fill	Auto-fills patterns.	Type first example → rest auto-filled.
Sorting & Filtering	Organize and view selective data.	Sort salaries descending.
Freeze Panes	Keep headers visible while scrolling.	View column titles always.