

Microsoft Excel - Advanced Excel Formulas & Functions

CONDITIONAL STATEMENTS

IF(logical_test, [Value if True], [Value if False])

AND/OR(logical1,[logical2],...)

NOT(logical)/<>

IFERROR(value, value_if_error)

IS Statements

ISBLANK(value) **ISNUMBER**(value)

ISTEXT(value) **ISERROR**(value)

ISEVEN(value): reference cell or value must be a number

ISODD(value): blank(Even=>True), otherwise #VALUE!

ISLOGICAL(value): logical operator (True/False)

ISFORMULA(value)

COMMON STATS FUNCTIONS

Basic Stats Functions (Ignore Missing Value/String)

COUNT(value1,[value2],...) **AVERAGE**(value1,[value2],...)

MEDIAN(value1,[value2],...) **MODE**(value1,[value2],...)

MAX(value1,[value2],...) **MIN**(value1,[value2],...)

PERCENTILE(array,k) **STDEV**(value1,[value2],...)

VAR(value1,[value2],...)

RANK(number,ref,[order]): 0(desc,default),1(asc)

SMALL(array,k): kth smallest values within an array

LARGE(array,k) **PERCENTRANK**(array, x)

RAND() **RANDBETWEEN**(bottom,top)

SUMPRODUCT(array1, array2 ... array_N): all arrays must have the same dimensions

SUMPRODUCT+filters to calculate products only for rows that meet certain **criteria**:

SUMPRODUCT((A2:A17="Shaws")*(B2:B17="Apple")*C2:C17*D2:D17)

SUBTOTAL(function_num,ref1,...): 可筛选, 10X 支持手动隐藏(先自动筛选、再手动隐藏)

1 AVERAGE 2 COUNT 3 COUNTA 4 MAX 5 MIN 9 SUM

COUNTIF(range, criteria)

SUMIF(range, criteria, sum_range)

AVERAGEIF(range, criteria, average_range)

COUNTIFS(criteria_range1, criteria1, criteria_range2 , criteria2...)

SUMIFS(sum_range, criteria_range1, criteria1, criteria_range2 , criteria2...)

AVERAGEIFS(average_range, criteria_range1, criteria1, criteria_range2 , criteria2...)

Asterisk (*) - zero or more characters

Question mark (?) - any one character

Tilde (~) - escape for literal character (~*) a literal question mark (~?), or a literal tilde (~~).

LOOKUP & REFERENCE FUNCTIONS

VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup]): Data Validation + Vlookup => 查询系统

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

ROW([reference]): returns the row number of a given reference

ROW(): return the row or column number of the cell in which the formula is written

ROWS(array): returns the number of rows in a given array or array formula

COLUMN([reference]) **COLUMN()** **COLUMNS**(array)

INDEX(array, row_num, column_num)

MATCH(lookup_value, lookup_array, [match_type]):
lookup_array must be a 1-dimensional array

1: Find largest value < or = lookup_value 升序

0: Find exact lookup_value

-1: Find smallest value > or = lookup_value 降序

INDEX+MATCH: find values in any column/ row in an array

INDEX(B2:D4, MATCH(B6,A2:A4,0), MATCH(B8,B1:D1,0))

XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])

CHOOSE(index_num, value1, [value2], ...)

- List items can include numbers, cell references, defined names, formulas, or text (or a mix!)

- CHOOSE acts like an INDIRECT function, and can interpret cell references instead of treating them as text

OFFSET(reference, rows, columns, [height], [width])

= **SUM**(**OFFSET**(A2,COUNTA(B:B)-5,3,5,1))

COUNTA(value1,[value2],...): 统计非空单元格

TEXT FUNCTIONS

TRIM(text) **UPPER**(text) **LOWER**(text)

PROPER(text) **CONCATENATE**(Text1, Text2...): &

LEFT(text, [num_chars]): default [num_chars]=1

RIGHT(text, [num_chars]) **LEN**(text)

MID(text, start_num, num_chars)

TEXT(value, format_text): "m/d/yyyy" or "\$#,##0.00"

VALUE(text): convert a text string that represents a number into a value

SEARCH(find_text, within_text, [start_num]): otherwise returns #VALUE! error

FIND(find_text, within_text, [start_num]): case-sensitive

IF(ISNUMBER(SEARCH(find_text, within_text)),value_if_true,value_if_false):

to classify data based on cells that contain specific strings of text

=**IF**(**ISNUMBER**(**SEARCH**("Disp",A2)),"Display","Other")

DATE & TIME FUNCTIONS

Date Value: use midnight on 1/1/1900 as the start point.

DATEVALUE(date_text) **TIMEVALUE**(time_text)

Date Formatting

d = day w/out leading zero (1-31)

dd = day w/ leading zero (01-31)

ddd = day-of-week (Sat)

dddd = day-of-week (Saturday)

m = month w/out leading zero (1-15)

mm = month w/ leading zero (01-15)

mmm = month abbreviation (Jan)

mmmm = full month (January)

yy = last 2 digits of year (15)

yyyy = full year (2015)

TODAY() **NOW()** **YEAR**(serial_number)

MONTH(serial_number) **DAY**(serial_number)

HOUR(serial_number) **MINUTE**(serial_number)

SECOND(serial_number) **EDATE**(start_date, months)

DATE(year, month, day)

EOMONTH(start_date, months)

YEARFRAC(start_date, end_date, [basis])

0 (default) = US (NASD) 30/360 1 = actual/actual

2 = actual/360 3 = actual/365

4 = European 30/360

WEEKDAY(serial_number, [return type])

WORKDAY(start_date, days, [holidays])

NETWORKDAYS(start_date, end_date, [holidays]): counts the number of workdays between two dates

DATEDIF(start_date, end_date, unit): calculates the number of days, months, or years between two dates

"D" = # of days between dates

"M" = # of months between dates

"Y" = # of years between dates

"MD" = # of days between dates, ignoring

months and years

"YD" = # of days between dates, ignoring years

"YM" = # of months between dates, ignoring

days and years

ARRAY FORMULAS & EXTRA BONUS FUNCTIONS

Named Arrays

SUM(A1:A5 * {1;2;3;4;5})

TRANSPOSE(array)

INDIRECT(ref_text, [a1]): returns the reference specified by a text string, and can be used to change a cell reference within a formula without changing the formula itself

= **SUM**(**INDIRECT**(D5&"!"&"C\$C7"))

HYPERLINK(link_location,[friendly_name])

EXCEL FORMULA 101

Common Errors

#####

#NAME?: Excel does not recognize text in a formula

#VALUE!: Formula has the wrong type of argument

#DIV/0!: Formula is dividing by zero or an empty cell

#REF!: Formula refers to a cell that is not valid

#N/A: Formula cannot find a referenced value

Data Validation: restricts the values that a user can enter a given cell.

- Number Type (Whole vs. Decimal)
- Value (Between, Less Than, Equal To, etc)
- List of Items (Based on cell range or manual list)
- Date/Time (Between, Less Than, Equal To, etc)
- Text Length (Between, Less Than, Equal To, etc)
- Custom (Formula-Driven)

Fn Shortcuts

- F1** • Launches the Excel help pane (default)
• Links to the Microsoft Support website (tool-specific)
- F2** • Allows you to edit the active cell
• Highlights cells referenced by the active formula
- F4** • Repeats the last action taken (default)
• Toggles absolute/relative cell references within a formula
- F9** • Calculates all workbook formulas (when in manual mode)
• Evaluates each function argument within the formula bar • Array

CTRL Shortcuts

Ctrl + Arrow: Jumps to the last cell in a data region, in the direction of the arrow

Ctrl + Home/End: Jumps to the Home (top-left) or End (bottom-right) cell in a region

Ctrl + Shift + Arrow: Selects to the last cell in a data region, in the direction of the arrow

Ctrl + .: Jumps straight to each corner within a selected cell range

Ctrl + PgUp/PgDn: Switches worksheet tabs, either to the left (PgUp) or right (PgDn)

Auditing Tools

Trace Precedents

Trace Dependents

Show Formulas

Evaluate Formula

Error Checking

Alt Key Tips